# MACWORLD

*January 1987 $3.95*
*Canada $4.95*

*The Macintosh™ Magazine*

# Giant Steps for Desktop Publishing!

- *Superb Big Screens*
- *Drawing with PostScript*
- *6 Ways to Paint*

NEW!

# Turbo Pascal for the Mac: incredibly fast and fully integrated!

Borland's new Turbo Pascal for the Mac™ is so incredibly fast that it can compile 1,420 lines of source code in the 7.1 seconds it took you to read this sentence.

And reading the rest of this page takes about 5 minutes, which is plenty of time for Turbo Pascal for the Mac to compile at least 60,000 lines of source code!

### *Turbo Pascal for the Mac does both Windows and "Units"*

The *separate* compilation of routines offered by Turbo Pascal for the Mac creates modules called "Units"—which can be linked to any Turbo Pascal® program. This "modular pathway" gives you "pieces" which can then be integrated into larger programs. (You build the "pieces" once, and you know they work, so you can use them again without having to recompile.) The immediate benefits of this technique are a more efficient use of memory and a reduction in the time it takes to develop large programs. (What you need to run Turbo Pascal for the Mac is 256K minimum—or half a Fat Mac, 1 drive, and the ability to handle astonishing speed.)

> "The timing of Turbo Pascal for the Mac couldn't be better. The recent success of the Macintosh in business and its continuing momentum in higher education coincide well with the introduction of Turbo Pascal for the Mac. Turbo Pascal is already an industry standard in the IBM-compatible world, and we're very excited to see Borland International's new commitment to provide this and other modestly priced, high-quality software for the Macintosh computer.
>
> **John Sculley, Chairman, Apple Computer, Inc.**

> "Turbo Pascal has become the language of choice at major educational institutions around the country, and more than 500,000 copies of the IBM PC version have been sold. We believe that Turbo Pascal for the Mac is the ideal educational and professional programming tool for the Macintosh.
>
> **Philippe Kahn, President, Borland International**

### *Turbo Pascal for the Mac is so compatible with Lisa® that they should be living together*

Routines from Lisa Pascal,™ Macintosh Programmer's Workshop Pascal, and Inside Macintosh can be compiled and run with only the subtlest changes. Turbo Pascal for the Mac is also compatible with the Hierarchical File System of the Macintosh.™ (You can define default volume and folder names for the names used in compiler directives.) Compatibility is also familiarity, and you'll feel right at home with Turbo Pascal for the Mac because it fits neatly into every aspect of the Macintosh environment. The pull-down menus are there, along with dialog boxes to guide you in making choices and picking options.

### *Turbo Pascal for the Mac cranks out more than 12,000 lines a minute*

Better than *12,000 lines per minute* of compiled source code race out of Turbo Pascal for the Mac. There is definitely "No Waiting." And none of the "stop/start" compiling delays that afflict some of the software programs that we're not mentioning here. (They can take 10 minutes to do what Turbo Pascal for the Mac can do in 10 seconds!)

You don't spend a lot of up-front time learning to use Turbo Pascal for the Mac. It's as *easy* as it is *fast*—which is not to say that it's over-simplified or written for people who have recently learned to walk erect. Instead, it's electronic proof that sophistication and complication don't need to go hand-in-hand.

In all software, there's the Hard Way, the Wrong Way, the Weird Way, the No Way, and the Borland Way. Welcome to the Borland Way!

### *How to walk and chew gum!*

Turbo Pascal for the Mac lets you do up to *8 different things at once*. You can have up to 8 separate programs in memory, work on one, move on; work on another, move back—or duck and weave between all 8 at the same time! And you can do these 8 Easy Pieces *while you run* the compiler. Multiple editing windows allow you to edit, compile, and execute each window individually. With several windows open at the same time, you switch from one open window to another faster than a cat burglar—and never get caught. It's "take the source code and run!"

### *The 27-Second Guide to Turbo Pascal for the Mac*

- Compilation speed of more than 12,000 lines per minute
- "Unit" structure lets you create programs in modular form
- Multiple editing windows—up to 8 at once
- Compilation options include compiling to disk or memory, or compile and run
- No need to switch between programs to compile or run a program
- Streamlined development and debugging
- Compatibility with Lisa Pascal and Macintosh Programmer's Workshop Pascal (with minimal changes)
- Compatibility with Hierarchical File System of your Mac
- Ability to define default volume and folder names used in compiler directives
- Search and change features in the editor speed up and simplify alteration of routines
- Ability to use all available Macintosh memory without limit
- "Units" included to call all the routines provided by Macintosh Toolbox

### *Clear your desk, SideKick's here!*

*SideKick® brings true desktop management and communications to your Mac. Now you can automatically dial phone numbers, log on to bulletin boards, schedule appointments, jot down notes, calculate business expenses—and more—while running all your other Mac software. Once you get SideKick you'll wonder how you ever did without it!*

*See order form on right-hand page ▶*

# Introducing Reflex for the Mac, NEW! Borland's remarkable new relational database

Because it is a truly relational database, Reflex for the Mac™ lets you get your various acts together. Lets you connect "A" to "B" to "C," or "Dog" to "Cat" to "Fight." Or whatever links and connections you need to make and need to see. It's a simple spreadsheet-style series of electronic and visual cross-references. There's a clear connection (which you first make by drawing it on-screen) between "Client"—"Matter"—"Attorney"—"Time Sheet"—"Expenses" and "Bill." Or between "Slow Driver in Left-Hand Lane"—"Mile-long Traffic Jam" and "Shot from Behind." It's all relational.

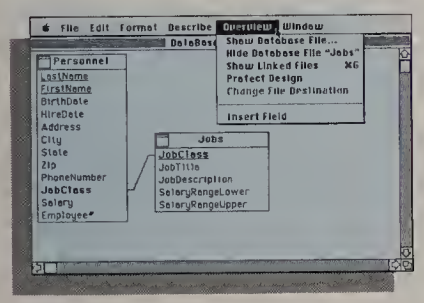
Designed to make the most of your Mac's visual talents, Reflex for the Mac lets you place fields and pictures wherever you want them on the page—and print them that way with your Report Generator.

### *A funny way to use Reflex for the Mac*

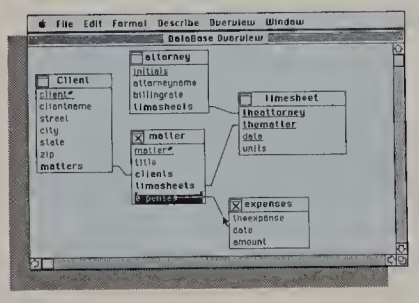
Let's say you have to make a lot of speeches and you like to tell jokes, but can't always remember the right one for the right audience at the right time. So you use Reflex for the Mac to set up multiple files that all connect to each other.

Your "Joke" file connects to your "Audience" file, which is split into categories like "Friendly," "Hostile," "Dumb," "Student" or whatever—all of which are interconnected and relational. Reflex for the Mac lets you find the right joke for the right audience, right now.

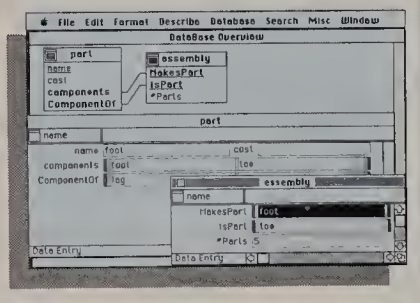
(The serious sides of business include applications like client billing, stock portfolio management, tax planning, and your checkbook.)




After opening the "Overview" window, you draw link lines between databases directly onto your Macintosh screen.



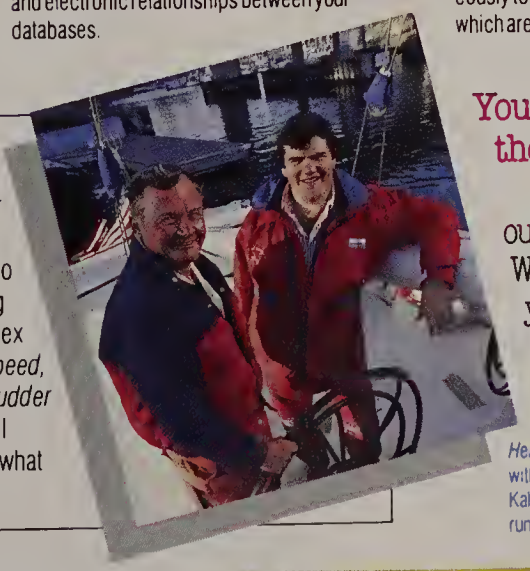

The link lines you draw establish both visual and electronic relationships between your databases.




You can have multiple windows open simultaneously to view all members of a linked set—which are interactive and truly relational.

### *Mac News for Kangaroos!*

*Heart of America*, one of the U.S. 12-meter contestants in the America's Cup races in Australia, is relying on Reflex for the Mac to help *Bring The Cup Up*. (They're also using Borland's SideKick and Turbo Pascal.) Reflex analyzes 20 different variables like *wind speed, heel angle, backstay load, trim tab angle, rudder angle* and 15 other criteria to show and tell *Heart of America* where to be when—and what to do now to win!



*Heart of America*'s skipper Buddy Melges with Borland International's skipper Philippe Kahn on a testing, training, and analytical run, Santa Cruz, California.

### You need Reflex for the Mac

Get some Reflex action out of your Mac. Call now. With Reflex for the Mac, you'll have all the right connections—for only $99.95!

> "Really uses the visual strength of the Mac to produce a database design tool
> *Adam Greene, InfoWorld*
>
> . . . a stunningly wonderful application generator/dbms
> *Esther Dyson, Release 1.0*
>
> Bridges the gap between the pretty programs and the power programs
> *Stewart Alsop, PC Letter*"

**YES!** I want the best!

*Send me Turbo Pascal for the Mac, Reflex for the Mac, or SideKick for Mac at:*

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***Minimum system requirements:***

*Turbo Pascal for the Mac: 256K. Reflex for the Mac: 512K. SideKick for the Mac: 128K.*

M52

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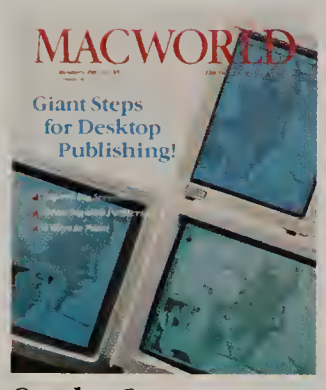
*January 1987*

*The Macintosh™ Magazine*




***On the Cover***
*The image on these large-screen monitors was created with Adobe's new PostScript graphics program,* Illustrator. *See* Macworld News *for a report on the software, and p. 88 to find out if bigger really is better.*

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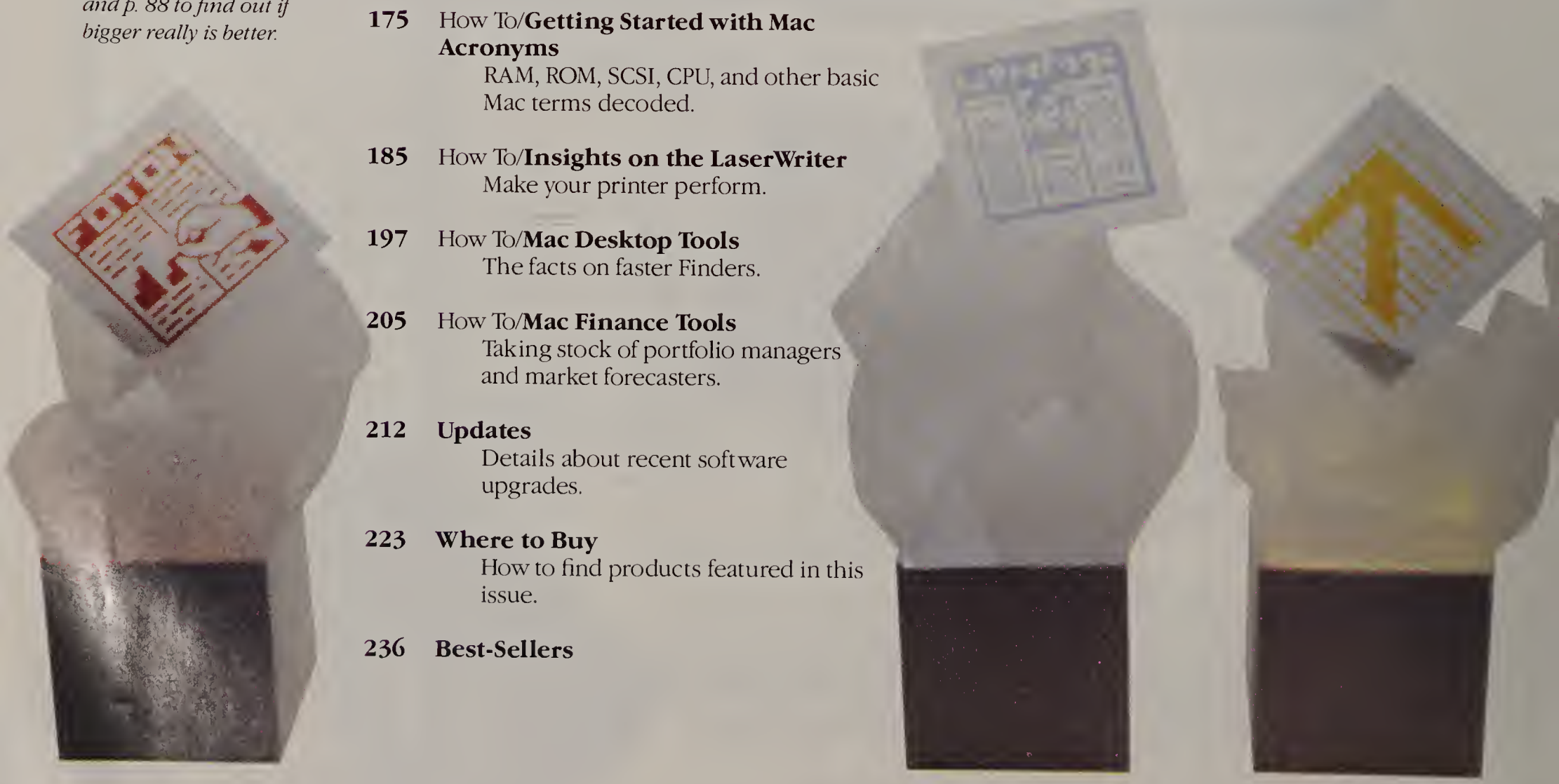
▪ *Armchair Quarterbacks* Coach the great Super Bowl teams of the past.

Plus, reports on Motorola's 68030, a fiber optic AppleTalk network, escalating chip prices, the Mac in the medical market, and more.



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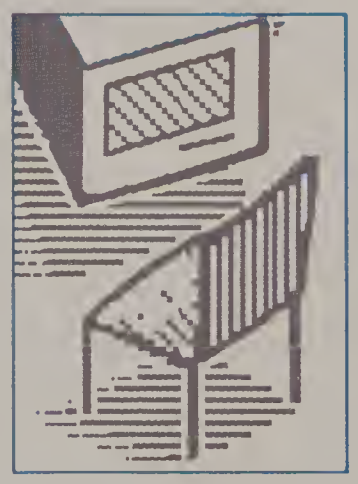

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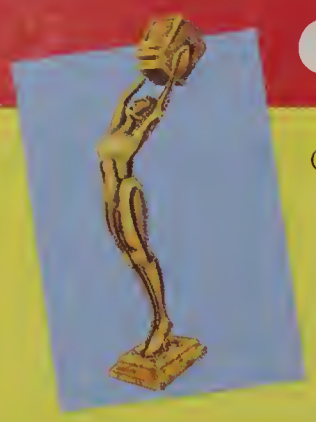

Choosing a database manager is no easy task. It's by far the most confusing and fiercely competitive field in Mac software. But now your buying decision is crystal clear, because the editors of MacUser and the readers of MACazine have both selected OverVUE as the Best Database of the Year.

Said MacUser (Jan. 1986), in selecting OverVUE for its **Editors Choice Award:** "OverVUE 2.0 is a deceiving program in that the more you use it, the more you realize what it can do. Power, speed and logical menus make this a dream database."

When MACazine (Jan. 1986) bestowed OverVUE with its **Readers' Choice Award,** they wrote: "We selected OverVUE because of its ease of use, clairvoyance and statistical capabilities. The fact that OverVUE was subsequently selected by our readers as Best Database simply confirms our original assessment: the product is a jewel and the customer support a bonus!"

OverVUE's clean sweep of these two prestigious awards only confirms what everyone else has been saying all along:

Infoworld (July 8, 1985): "...it is Macintosh software done right."

Icon Review (Fall 1985): "OverVUE 2.0 is our favorite database workhorse...it simply offers the best balance of power and ease-of-use available on the market today."

Nibble Mac (Oct. 1985): "OverVUE is not only easy to set up, it's the easiest for data entry. Its tools for entering repetitive data minimizes typing time."

Online Today (electronic version — Nov. 1985): OverVUE 2.0 is a heavy-duty data management tool...It does all the things a good relational database manager should."

OverVUE's features and power make it the ultimate database choice. Clearly, users and editors alike think OverVUE is something special. We think you will, too.

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# THE FUTURE REPEATS ITSELF.

**JANUARY 1984.** (Cupertino, California.)—Apple introduces the Macintosh.™ At the press conference, six software developers, including Microsoft and Lotus, announce their commitment to the new machine. Among them is THINK Technologies, a start-up developer of advanced systems software.

THINK announces Macintosh Pascal. It is a breakthrough. For the first time, a practical interactive interpreter is available for Pascal. People can now learn to program in a whole new way. They can look inside their program and get immediate feedback. Incorporating the Mac interface in this programming environment, THINK creates a new future for the Macintosh in education.

Writing in The New York Times, Erik Sandberg-Diment says "MacPascal alone might be reason enough for the college-bound science or engineering major to purchase" a Mac. The product becomes a standard in university computer science courses. Users are enthusiastic. But in time they demand even more from THINK.

**AUGUST 1986.** (Boston, Massachusetts.)—THINK introduces Lightspeed Pascal at MacWorld Expo. It is a breakthrough. It utilizes new compiling and linking technology previously available only with THINK's Lightspeed C. But it goes even further. Like Macintosh Pascal, it provides the same ability to look inside a program, but without the need for an interpreter. It offers blinding speed and the ability to build large programs. The response is overwhelming. In the first two weeks THINK sells thousands.

Lightspeed Pascal marks a turning point in programming the Mac. It has all the features that made Macintosh Pascal a standard. And much more. Now users can create real standalone "double-clickable" applications and desk accessories. THINK creates a new future for Macintosh programmers.

Lightspeed Pascal is priced at $125. It is not copy-protected. The package includes a 600-page manual with extensive index. It provides complete Toolbox/OS support. It is compatible with Macintosh Pascal and Lisa Pascal.

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---

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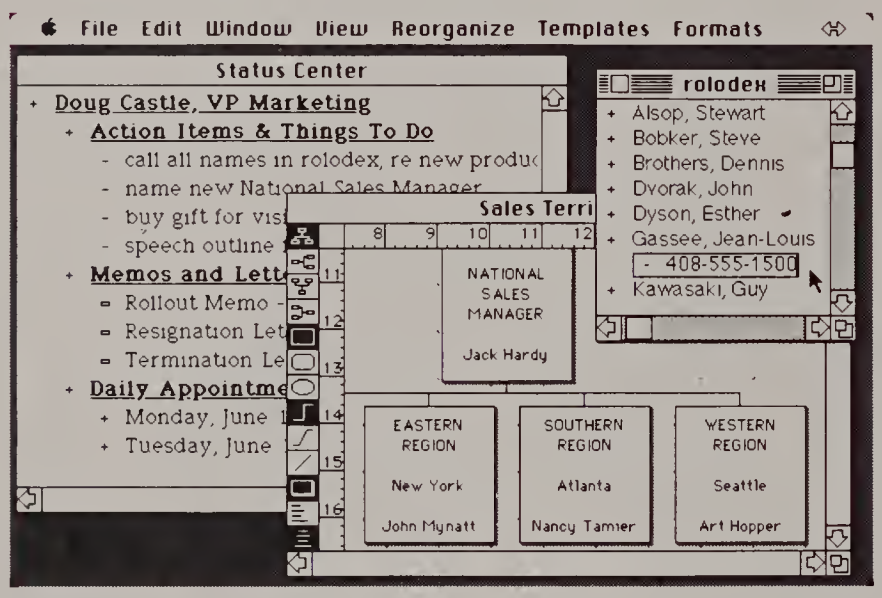


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# Mac Bulletin

## Mail-Order Firm Goes Chapter 11

▶ On October 29, the personal computer mail-order supplier Northeastern Software filed for protection from creditors in bankruptcy court in Bridgeport, Connecticut. Northeastern's lawyer, James Verrillo, told the *Wall Street Journal* that price wars in the mail-order business led to the Chapter 11 filing. But prior to that move, reports *Macworld* and *PC World* publisher Jim Martin, Northeastern "claimed they had overextended themselves with a tremendous amount of advertising." Northeastern ads in the two magazines were refused by Martin after a letter of complaint about Northeastern, published in the October issue of *Macworld,* generated a torrent of additional complaints about paid-for products never sent, stalled refunds, and other examples of poor service and questionable business practices.

## Common LISPs

▶ ExperTelligence of Santa Barbara, California, developer of AI languages and tools for the Macintosh, has introduced ExperCommonLISP, a full implementation of the language that works according to the LISP committee standards. The language provides complete access to the Toolbox and includes a Smalltalk-like class system.

Unlike the company's initial product, ExperLisp 1.5, ExperCommonLISP lets you create stand-alone applications and has a feature that reduces the size of programs so that you don't need to carry the extra baggage of LISP around with applications. ExperTelligence also distributes a portable LISP, Le Lisp, and Prolog language products.

Coral Software of Cambridge, Massachusetts, is finishing up its version of Common Lisp, due out in a few months. Coral Lisp, now available, is a subset of the Common Lisp under development.

## Academic Honors

▶ Apple Computer is offering $50,000 in prizes for outstanding academic applications that run on Apple computers in United States colleges and universities. The judges—including faculty, campus computing services representatives, one student, and *MacPaint* author Bill Atkinson—will award a $20,000 grand prize and four prizes of $7500 each, chosen from entries in four areas: In-Class Instruction, Teaching Tools, Study/Research Tools, and Development Tools. The deadline for entry is February 28, 1987. For details and guidelines write to Wheels for the Mind Awards, Apple Computer, 20525 Mariani Ave., MS 23-E, Cupertino, CA 95014.

## Hard Disk Softeners

▶ Two utilities that make life easier for Apple SCSI hard disk owners are now available for the Apple HD 20. The *Find File* desk accessory lets you locate an HFS file in the Finder from an application. The *Disk First Aid* "scavenger" examines the data structures on a disk and attempts to repair any damage it finds. Both are available from dealers and user groups.

## The MacEnhancer Lives

▶ The MacEnhancer, an adapter with extra ports first introduced by Microsoft a few years ago that has since been languishing, was reissued by Softstyle of Honolulu. The $245 Softstyle MacEnhancer attaches to a Mac serial port and provides an IBM PC-compatible printer port, two RS-232C serial ports, and an RS-422 Macintosh-style serial port. Your net gain is three ports, which means you don't have to adjust cables every time you want to use a different printer. Softstyle includes 15 printer drivers and easy-to-use installation software.

## Cross-Development in C

▶ Programmers working on projects destined for the Apple IIGS now have a faster way to finish code in the MactoGS Assembler Linker from Consulair of Portola Valley, California. The cross-development tool runs on a 512KE Mac but is fastest on a 68020-enhanced Mac. Besides being compatible with the Apple II Programmer's Workshop assembler, it produces complete stand-alone IIGS applications and allows symbolic debugging.

## Designer Layouts

▶ Recognizing that its page-layout program delivers the means of publication design into untrained hands, Aldus has brought out the first in a series of templates for *PageMaker* that take some of the guesswork—and hopefully some of the ghastly—out of desktop publishing projects. *PageMaker Portfolio: Designs for Newsletters* ($79) offers 21 templates based on seven fundamental designs. Others in the series will offer designs for catalogs, price lists, brochures, and fliers.

## Site Licensing on the Mac

▶ Solutions, Inc., recently announced a site licensing program for its *Glue* software that allows people to open transferred files from programs such as *Excel* or *Jazz* without having a copy of the application. For $7500, companies may purchase the right to make unlimited copies of *Glue* for use at a single company site—or for $22,000, unlimited copies at any site, including employees' homes. The licensing program—the first offered for Mac software—is significant because other publishers of important business software for the Mac have decided against site licenses. Microsoft, for example, offers a hefty discount to companies that purchase at least $100,000 worth of programs, but according to spokesperson Marty Taucher, the company doesn't believe in site licensing because "that releases

*(continues)*

too much control to the purchasers."

Other publishers may follow in Solutions' footsteps, but it's difficult for a company to weigh the licensing fees and the goodwill of corporate purchasers against the probable loss of some individual sales. Aldus, maker of *PageMaker,* is contemplating site licensing; the recent release of its version for the IBM PC, for which site licenses are more common, has put pressure on the company to decide the issue.

## A Growing Family

▶ AST Research plans to introduce a broad spectrum of products for the Mac this year. In the first quarter, look for ten new AST offerings in three families of products—all storage and communications products.

## Judge Okays Look and Feel Copyright

▶ There's finally a court decision about the ability to copyright the look and feel of software, not just the programming code. In October, the U.S. district court ruled in San Francisco that the look and feel of Brøderbund's *Print Shop,* and its audiovisual features, artistic expression, structure, sequence, and screen layout are all protected under copyright law. Now the legal fight can begin in earnest; Chicago high-tech lawyer Mark Hellman predicts the decision will open the floodgates of litigation. "The matter is still to be resolved through the appeals process," he said. "On a case- by-case basis, meat is put on the bones of the rules. This one case may cause an immediate shakedown, but later on, rules will be more clearly defined."

## More Publishing Options TK

▶ Three new desktop publishing products have recently emerged.

*XPress* from Quark of Denver is geared for high-end ($595) word processing and page layout; it includes kerning and hyphenation as well as a built-in spelling checker.

Mansfield Systems of Palo Alto, California, has introduced *TechScriber,* a $395 program designed for producing technical documents. The application handles page layout as well as text editing and formatting, and it allows you to create tables, diagrams, and mathematical expressions.

*GrayPaint,* developed by Fractal Software of San Jose, is a graphics utility that lets you refine images such as scanned photos by controlling brightness and contrast and by painting in up to 65 shades gray. The program also includes a wide array of drawing tools. At press time the developer was embroiled in a bidding war that will determine the publisher of the program.

## Thanks for the Memories

▶ MacMemory, the leading manufacturer of memory upgrades for the Mac, is introducing a new hardware upgrade. The clip-on multifunction board has 1.5 to 3.5 megabytes of SIMM memory, a 68000 running at 16.67 MHz, a high-speed SCSI port that's three times faster than the current one, and MacSave (a RAM disk backup utility) and other firmware in the board's ROM. "We opted to go with the 68000 rather than the up-and-coming 68020 so that we can maintain more software compatibility with the existing base of Mac products," says sales director Thomas Massie. The board will be priced under $1500.

## A New Way to Network

▶ Pyramid Technology of Mountain View, California, is bringing out products that transparently integrate Macs, IBM PCs, and Sun Microsystems workstations, allowing files and mainframe computer resources to be shared. The Pyramid Connection consists of a series of Pyramid system, gateway, and communications programs that provide high-level networking for personal workstations. Centram's *TOPS* provides transparent file access from the UNIX host.

## Helix Hits the Big Time

▶ Odesta Corporation has announced *Helix VMX,* a version of the company's database that allows an extension of multiuser *Helix* to run on a network with a variety of Digital Equipment Corporation's VAX minicomputers. The Macintosh works as an intelligent front end to the VAX, which acts as a database server. The AppleTalk network is bridged to Ethernet via Kinetics' FastPath. "*Helix VMX* provides the best of both worlds for end-user computing and departmental processing," says Daniel Chaifetz, president of the Northbrook, Illinois, company. Both Apple and Odesta expect to attract the attention of corporate information-systems directors with this offering.

## Accelerators Proliferate

▶ For people who need more performance than the Mac currently provides, three companies—Novy Systems, Spectra Micro Development, and Ryad—have announced upgrade products that add the 68020 CPU and the 68881 math coprocessor to the Mac and the Mac Plus.

Novy Systems manufactures an 8-megahertz 68020 and 68881 upgrade that sells for $795. Novy also sells the 68020 without the math coprocessor for $595.

Spectra Micro Development has announced a $1295 accelerator board containing an 8-MHz 68020 and a 68881. A version of the upgrade that clips on to the Mac's 68000 is available for $1442.

Two types of accelerators are available from Ryad. The 68000 GT contains a 16-MHz 68000 and 128K of RAM. The GT's engine alone sells for $595 and is available with either 1 megabyte ($695) or 2 megabytes ($995) of RAM. The 68020 Turbo lets you upgrade the Mac or Mac Plus with a 68020 processor and a 68881 coprocessor. The Turbo's engine alone sells for $1395 and is available with 1 megabyte ($1595) or 2 megabytes ($1995) of RAM.

## The Latest Jazz

▶ Stories have begun to surface in user group newsletters that a new version of *Jazz* is on the way, but Lotus hasn't announced one. A company representative would say only that "we're continuing to revise and update all our core products, including *Jazz.*" □

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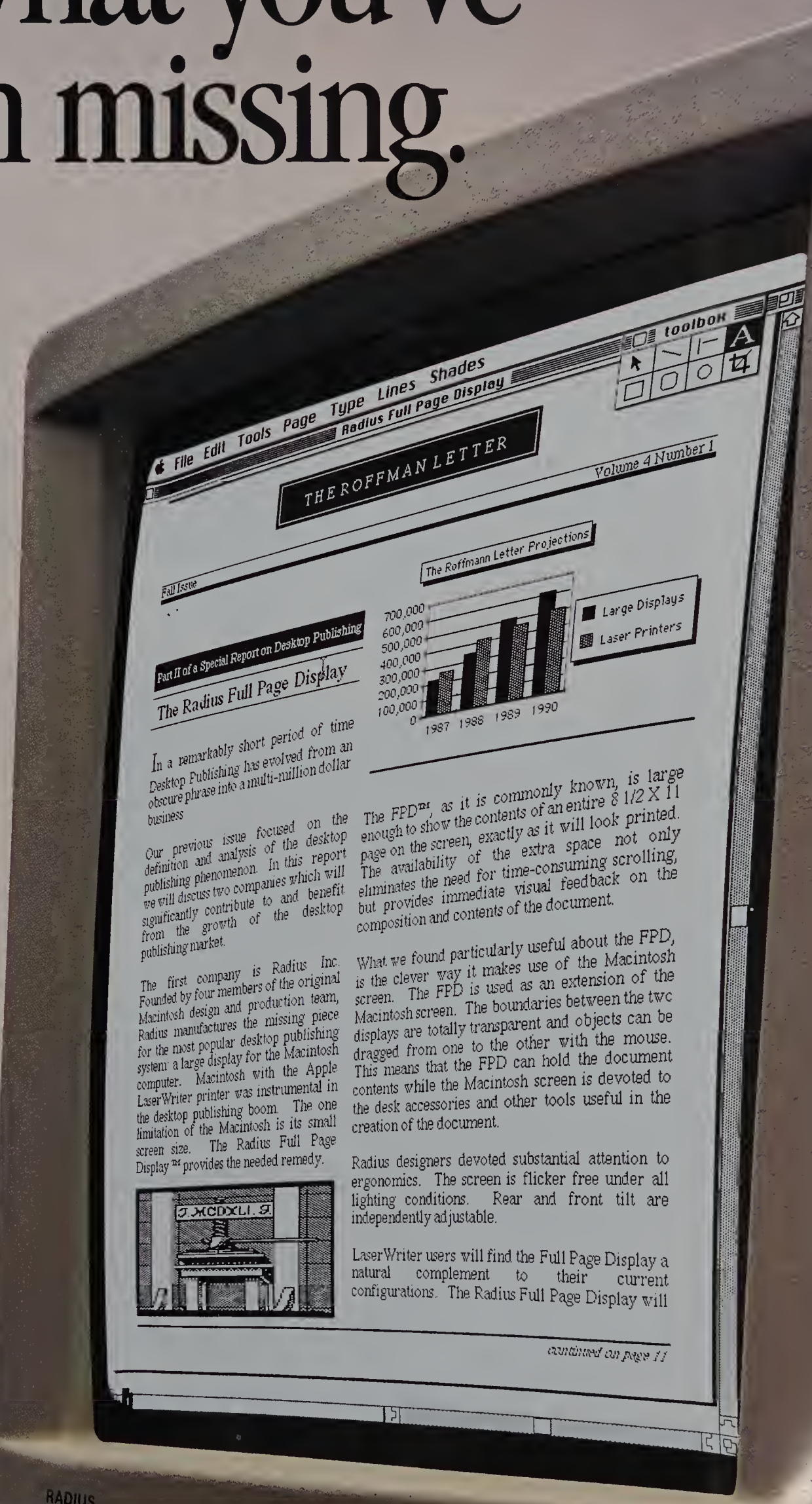

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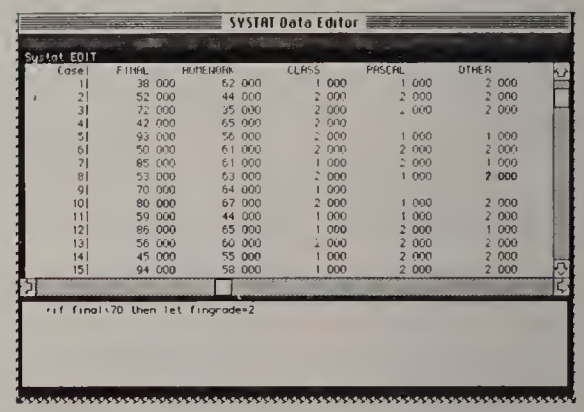


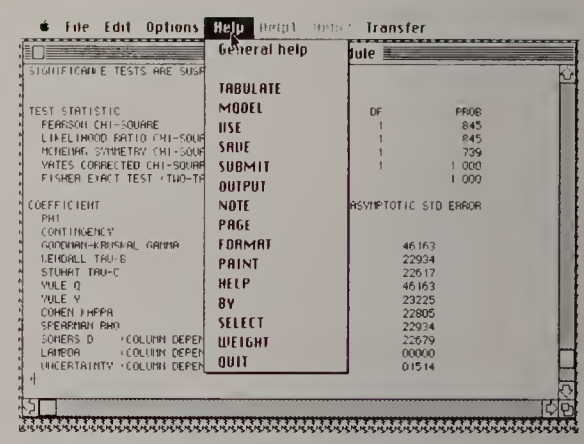


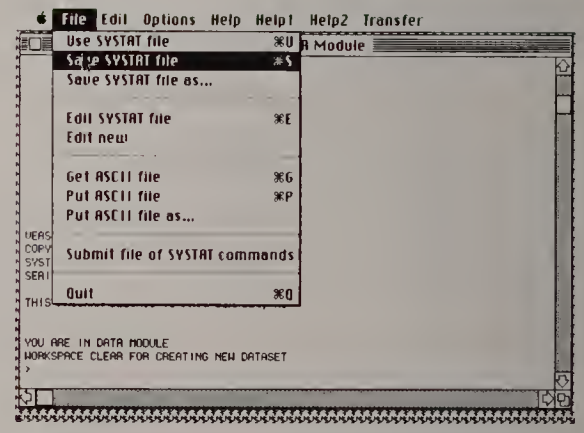


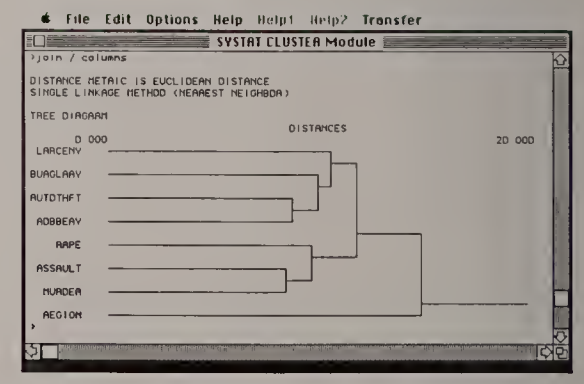


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**Up & Running Systems Limited,** *333 River (613) 748-6050. See Reader Service Card #*706.

Convention Handling System
Athlete Tracking Systems
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League Registration Systems
CLIMB . . . Club Listing & Information Management
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Business Checkbook Helper
FOLLOW > UP . . . Track office work
The Message Center
Time Wand Bar Code Reader
The Church Business Manager
Church Stewardship Program
Non-Profit Solution

## Polymath Small Business Solution

*Polymath specializes in database applications for small businesses and organizations that need to manage complex relationships among members, clients or donors, or between them and their transactions. Current products include a non-profit package for tracking donations and grants, a theatre or theatrical agency package for tracking talent and productions or events, a student and course tracking module for schools or independent trainers, a module for tracking work hours and wages for intermittent part time employees, and modules for dealing with reflexive relationships within a single file, such as family trees or sponsorship lines.*

*Modules, such as inventory management and purchasing, accounts receivable, journal-ledger systems, are available to meet your business needs. All are designed for creating custom applications for specific clients and can be tailored to minimize the wasted disk space generated by "off-the-shelf" application packages.*

*We understand that each business and each business person has a unique need for information gathering and management and we do our best to provide a finished product ideally suited to that individual need.*

**Polymath Program Productions,** *P.O. Box 2327 (for orders), 3242 Bayo Vista Avenue, Alameda, CA 94501, (415) 522-2342, CompuServe: 71076,1135. See Reader Service Card #*707.

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MacPayroll Plus . . . A Canadian Payroll System
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HEADHUNTER!
Mineral Identification & Inventory System
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Retail Engine . . . Complete Management System for the Apparel Retailer
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## Depot™ Repair System & APPLAUSE™ Automated Dispatch

*For service businesses of any size. The Depot Repair System is an improved way to perform service and cost controls, increase profits and report on service status, warranty costs, inventory and spares using a Macintosh computer.*

*On the bench or in the office the integrated APPLAUSE Automated Dispatch System will keep track of customers, distributed inventory and service contract status. When the phone rings your coordinator can instantly let your customers know your field rep has the parts and is on his way, and let you know profitability is under control!*

*XCEL Computer Systems has helped many international corporations improve profitability and maintain customer satisfaction. Act now, and change the way you work for the better. For a complete description of systems that we think are solving real service problems, call or write:*

**XCEL Computer Systems,** *255 Park Avenue, 10th Floor, Worcester, MA 01609 (617) 797-3025 Applelink #VO 154. See Reader Service Card #*708.

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## OMNIS 3 PLUS™

# "A SOLUTION *is only as* SOLID *as its* FOUNDATION."

That's why all of the solutions on the previous pages were developed using Omnis 3 Plus. Because, quite simply, there is no other database which is as powerful, as fast, as reliable, as flexible or as easy to program as Omnis 3 Plus.

In fact, it's for those same reasons that Omnis 3 Plus is the fastest selling relational database available on Macintosh, selling more than all the others combined. And if you thought the Macintosh didn't have a world class database, think again! Omnis 3 Plus is the second fastest selling relational database in the world.

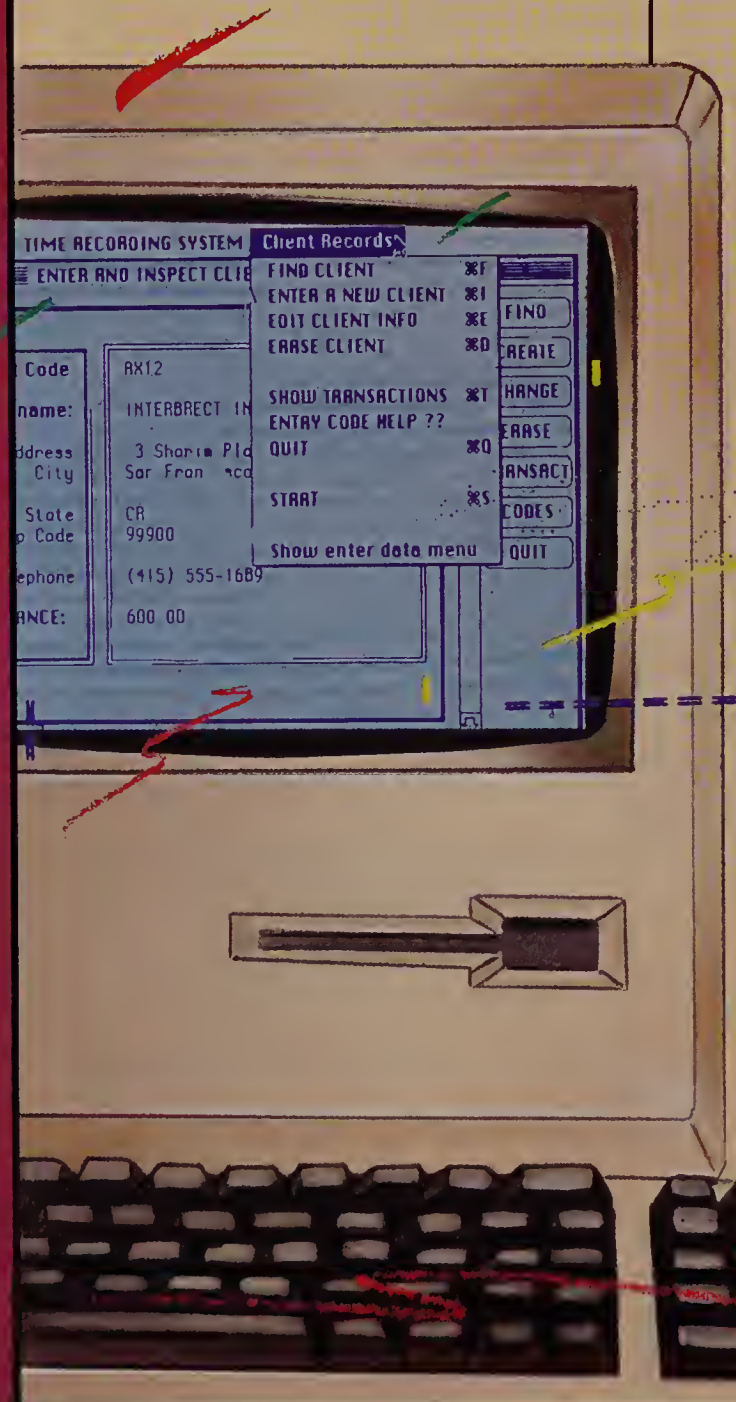
One feature which helped Omnis 3 Plus to become so popular is its ability to import data. Omnis 3 Plus accommodates so many data formats that it can import data from all popular microcomputer databases, spreadsheets, and even some word processors. So you don't have to wait to import your dBase™ II, III or III Plus data —you can do it right now with Omnis 3 Plus.

It would take twenty pages to list all of the features that Omnis 3 Plus has . . . so we'll list the one that it doesn't have: "memory caching."

Omnis 3 Plus doesn't use memory caching because we know that keeping data in memory instead of writing it to disk is very dangerous. When your data is in memory, it could be lost from a power failure, a system crash, or someone knocking out the plug—things that happen all the time with personal computers. But what's even worse is that you could lose more than just the last few records . . . you could lose your entire database!

But if memory caching is so dangerous, you might be wondering why so many other databases use it. They use it to make the database *seem* fast. Omnis 3 Plus doesn't use it because it doesn't have to "seem" fast—it *is* fast. Very fast. Omnis 3 Plus can retrieve one record in a file of 100,000 records in under .17 seconds. Many databases would have trouble even storing 100,000 records.

No microcomputer database can equal the performance of Omnis 3 Plus. When you purchase Omnis 3 Plus, you're not just getting the best database on Macintosh, you're getting the best database on any microcomputer.




*See Reader Service Card #703.*

**You're in good companies . . .**

A few of the companies using Omnis 3 Plus:

Adobe Systems
Alcoa Corporation
Aldus Corporation
American Express
American Systems Engineering
Apple Computer
Arco Oil & Gas Co.
Arthur Young
Citibank
Dade County Police Department
Dartmouth College
Dow Chemical
Dravo Corporation
Eli Lilly & Co.
Federal Express
General Computer Corporation
General Dynamics
Gestedner Office Systems
Herbal Marketing Associates
Hughes Aircraft Co.
John Deere
McDonnell-Douglas
Motorola Corporation
Nicolet Analytical
Owens Corning Fiberglass
Raytheon Co.
Rockwell International
Sara Lee Corporation
Seattle First National Bank
Sequoia Insurance Co.
Sony Corp.

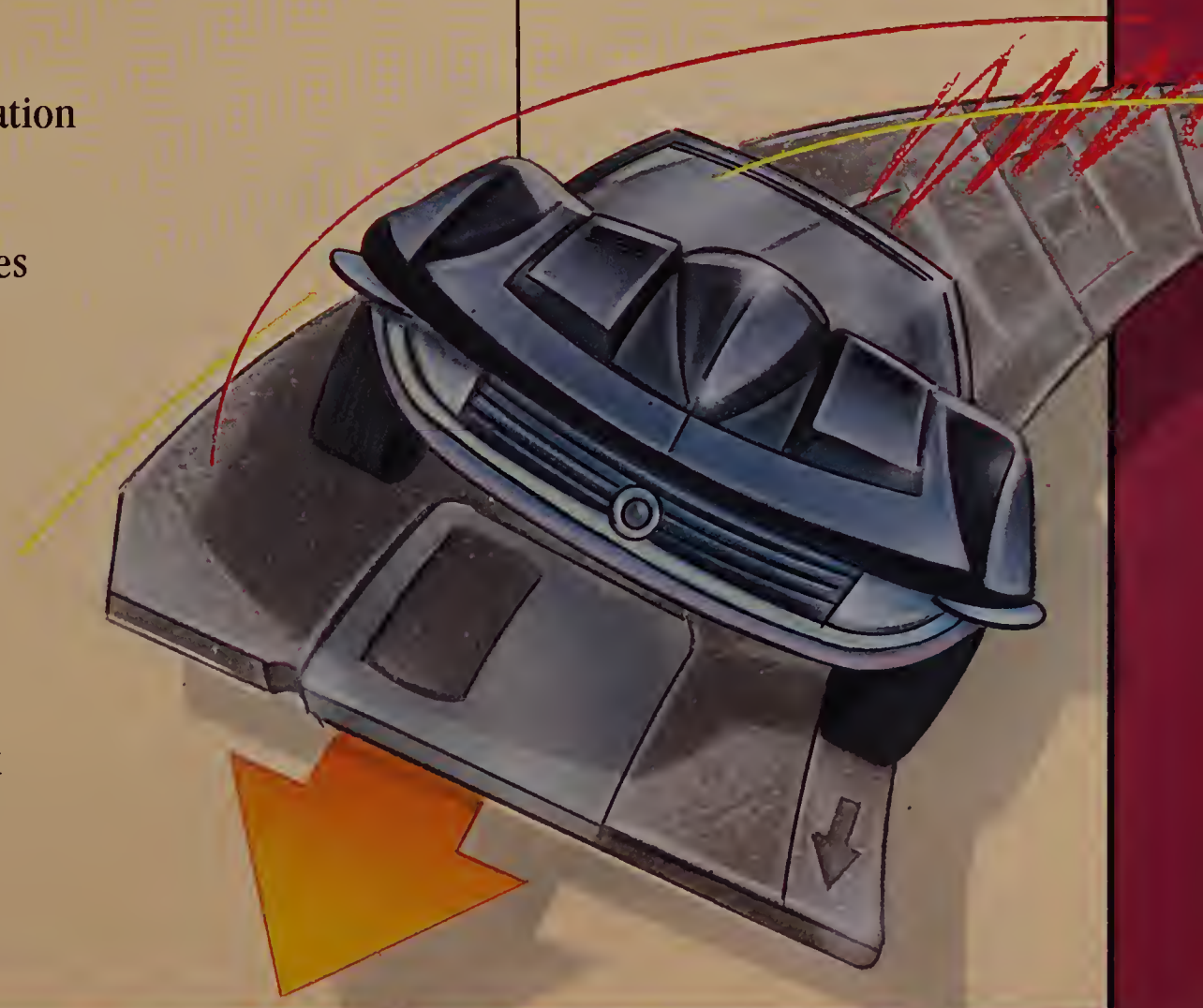
**OMNIS 3 PLUS**™

***"With Omnis, productivity has increased. We now have a central location for all of our contract related data and can access the information quickly."***

**Arco Oil & Gas Co.**

***"Dravo has about twenty databases on Omnis. We migrated from an IBM mainframe application to Omnis and feel we have gained much needed flexibility."***

**Dravo Corporation.**



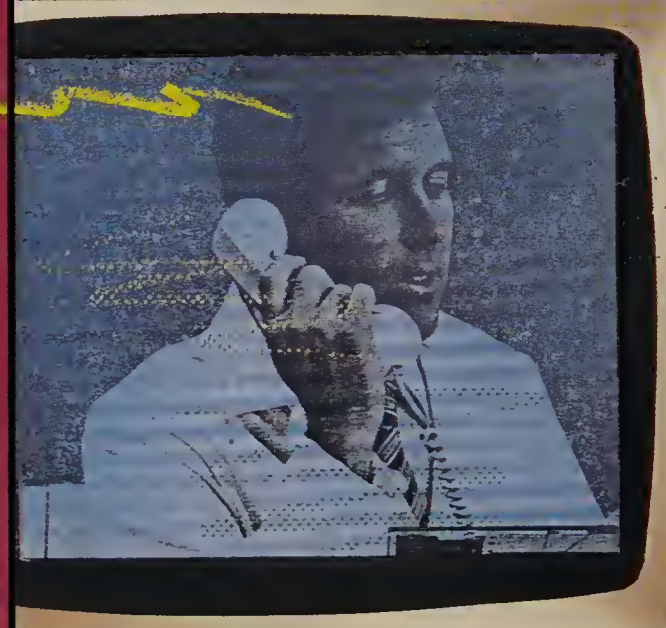
# "It Provided MINICOMPUTER POWER at MICRO PRICES."

Advances in high speed connections and shared hard disks allow networks of Macintosh computers to often outperform minicomputers.

***"We run Wabash Computer Systems (6 stores, $25 million sales) entirely on Macintosh Plus Computers using Omnis 3 Plus. We've networked Macintoshes in our Corporate Office, Accounting Department, and Art and Advertising Department. Each retail store runs on Omnis and generates invoices, tracks sales, serial numbers inventory, accounts receivable and customer lists . . . which are fed back to our Corporate Office.***

***Our user-friendly Omnis applications and Macintosh Computers are replacing a not-so-friendly Hewlett Packard HP-3000/42 multiuser multi-tasking Mini Computer that cost $250,000 to buy (with software) and over $7000 a month to support (exclusive of salaries)! If you'd rather buy our Mini Computer than a Macintosh, call us. We'll sell it to you at a very attractive price."***

**Lin Austin, CEO, Wabash Computer Systems**

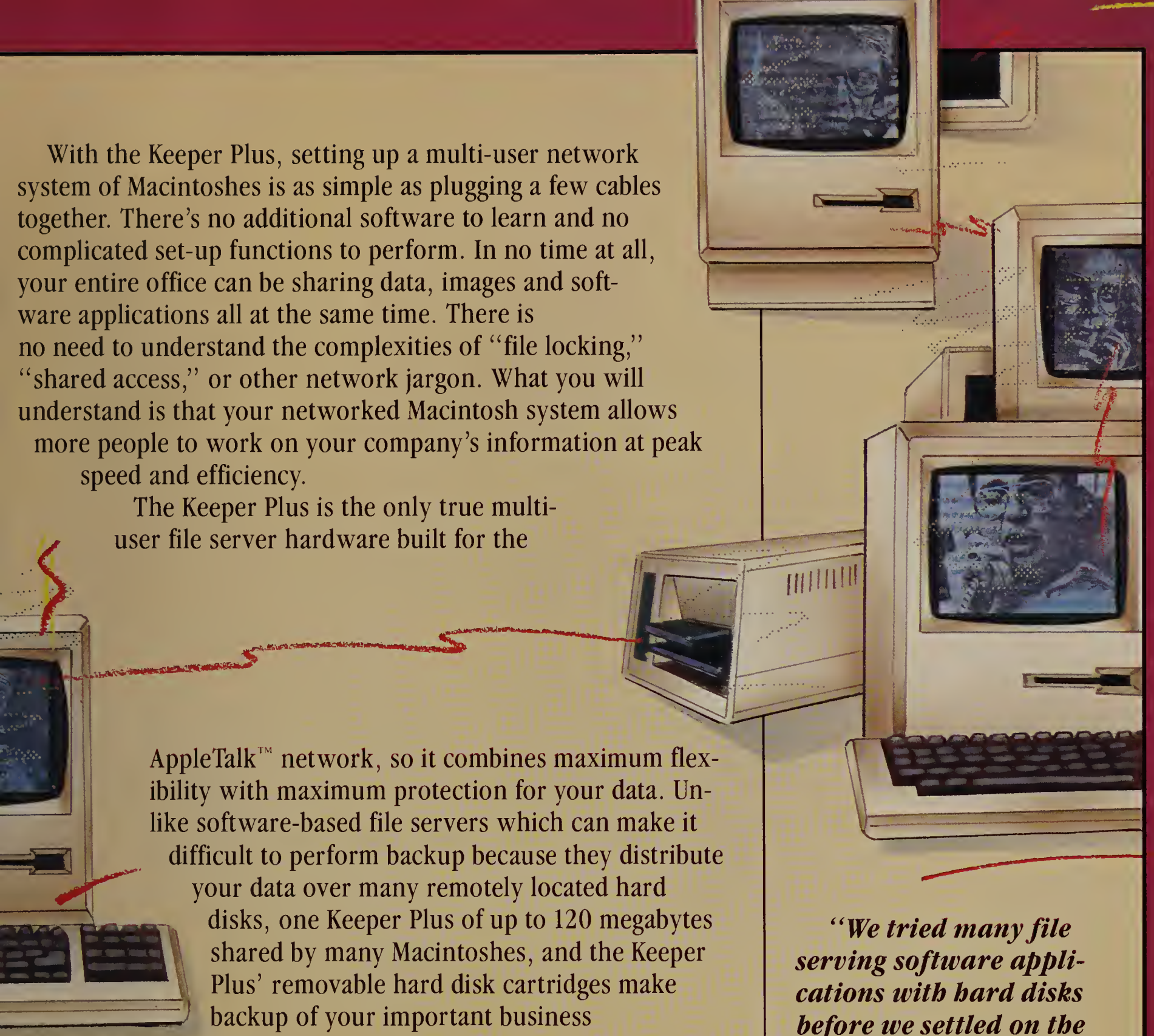


A Keeper™ Plus file server on a network with Omnis 3 Plus provides a powerful solution to business problems.

When you have a useful solution, you'll quickly find that it's being used by many people around your office. That's good: the more use it gets, the faster it pays for itself. To accommodate your growth you'll want to be able to access your data multi-user from many Macintosh computers.

With the Keeper Plus, setting up a multi-user network system of Macintoshes is as simple as plugging a few cables together. There's no additional software to learn and no complicated set-up functions to perform. In no time at all, your entire office can be sharing data, images and software applications all at the same time. There is no need to understand the complexities of "file locking," "shared access," or other network jargon. What you will understand is that your networked Macintosh system allows more people to work on your company's information at peak speed and efficiency.

The Keeper Plus is the only true multi-user file server hardware built for the AppleTalk™ network, so it combines maximum flexibility with maximum protection for your data. Unlike software-based file servers which can make it difficult to perform backup because they distribute your data over many remotely located hard disks, one Keeper Plus of up to 120 megabytes shared by many Macintoshes, and the Keeper Plus' removable hard disk cartridges make backup of your important business data simple and fast.



Advanced features such as print-spooling, automatic file compaction and expansion, capacities from 20 to 120 megabytes and multiple drives on a single network assure you that the Keeper Plus will be on the cutting edge of Macintosh file-serving technology for a long time to come.

The Keeper Plus is compatible with software and hardware gateways and bridges from AppleTalk to IBM mainframes, PC's, DEC VAX, and other AppleTalk networks.

All the features of the Keeper Plus make it an unparalleled choice for a network of Macintosh computers.

For more information on the Keeper Plus, call 1-800-523-8392 (or 512-280-1977 in Texas).

**REACH**
TECHNOLOGIES INCORPORATED

**The best networking solutions are within REACH.**

***See Reader Service Card # 704***

***"We tried many file serving software applications with hard disks before we settled on the Keeper Plus. All 14 users that share the Keeper Plus are extremely happy with its functionality and reliability."***

**—Chuck Mell,
CONTEL**

***"The Keeper Plus is the easiest file server to use for the Macintosh. It's met or exceeded my expectations in every area."***

**—Al Stirpe,
General Electric
Company.**

Applications designed specifically for your business or profession, the most powerful database, and the simplest, most flexible network file-server available for any personal computer, combine to give you an office system that pays for itself.

A single user Macintosh or a Keeper Plus network of Macintoshes on AppleTalk will perform like a mini-computer at a fraction of the expense. Low entry prices, easy expansion and upgrading keep your cost of computing low.

Fast, accurate access to the information that is integral to your business allows you to process work more quickly, keep in touch with your customers or clients, smooth your inventory flow or shorten your receivables cycle, and maintain that professional image that raises you high above the competition. Factors that affect your bottom line and yield a high return for your computer investment.

Low costs and high return are your guarantee that a solution will pay for itself. Software that has been installed at over 100,000 sites worldwide is your assurance that these solutions can work for you.

# "The PAYBACK Started RIGHT AWAY."

## OMNIS 3 PLUS™
### FROM BLYTH SOFTWARE

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*"The largest auto dealership in our area asked us to install a computer system to handle sales tracking, inventory control, and in-house auto-financing receivables. After the data was entered and we fired up the application, we immediately recovered the cost of the 2 Macs and the multi-user Omnis 3 package in money that, up to that point, my client didn't know he had!"*

Larry Cline
MicroSystems Consulting,
Virginia Beach, VA.

*"Omnis is fast. We want to pay what's fair and get claims concluded as soon as possible. The faster we can evaluate a claim, the better.*

*"Under the old system, people who were typing checks had no idea how much they were writing out in a day. With this system, at the end of the day the Omnis check register gives a total of the amount spent that day, so all our offices can keep in touch with spending.*

*"Omnis takes full advantage of the Mac interface so that an employee is up and going in under an hour. You get much more productivity."*

Bob Hoppie
Administrative Claims Manager,
Sequoia Insurance, Menlo Park, CA.

I'd like more information on solutions for my business. Please send me a copy of the *Omnis Business Directory* for the limited time price of $4 (regularly $7).

☐ I've enclosed a check for $4
☐ Please charge $4 to my credit card:

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Charge Account # _____ Expiration Date _____

Signature _____

Name _____

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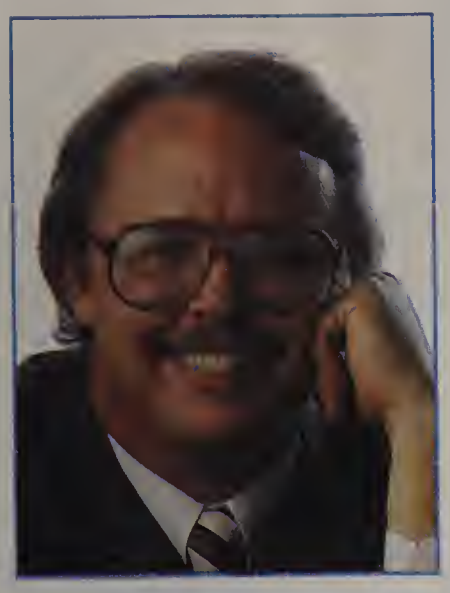
City _____ State ___ Zip _____

Phone ( _____ ) _____

*Send to: Blyth Software, Inc., 2929 Campus Drive, Suite 425, San Mateo, CA 94403.*
*OR CALL 800-843-8615 (Inside CA call 800-223-8050)*

David Bunnell



# 12 Who Made a Difference in 1986

*The first annual Personal Computer Achievement Awards honor 12 of the year's best and brightest PC players*

This is the time of year when a lot of magazines announce their awards. Most of the time the recipients are chosen by the editors of those magazines. And most awards go to companies and products. *PC World* has its annual World Class PC awards, which are based on a poll of readers. (Winners of the 1986 awards were announced in the October issue.)

This year, *Macworld* will also present World Class awards based on a readers' poll.

We feel that readers' polls are especially meaningful because they are the voice of the consumer computing in the wilderness. Such a contest is a hands-on revelation.

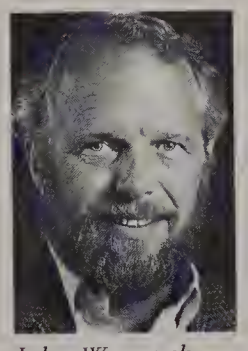
However, the temptation for an editor-in-chief to make awards selections—to play at being omnipotent and all-knowing—is not one I can easily resist. Frankly, it's too much fun to pass up.

So I have decided to establish the Personal Computer Achievement Awards for 12 people who have made a significant difference to computing during the past year.

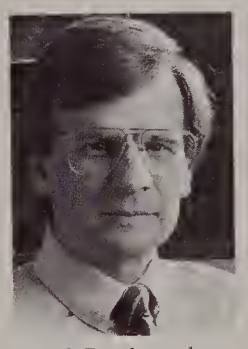
In making these awards I have relied on my own instincts, as well as on nominations that I received from the editors of *PC World, Macworld,* and *Publish!* magazines. There are other, more systematic ways of selecting winners, but ultimately the process is arbitrary.

*(continues)*

*John Sculley*
*Apple Computer*

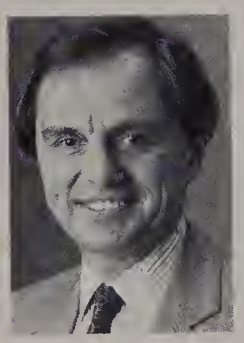


*John Warnock*
*Adobe Systems*



*Paul Brainerd*
*Aldus Corporation*

*Burrell Smith*
*Radius*



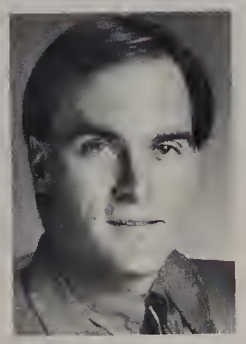
*Jean-Louis Gassée*
*Apple Computer*

*Bill Gates*
*Microsoft Corporation*

*Gary Kildall*
*KnowledgeSet Corporation*

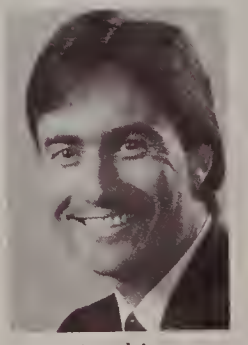
*Rod Canion*
*Compaq Computer*

*Michael Dell*
*PC's Limited*



*Kevin Jenkins*
*Hercules Computer Technology*

*Dan Bricklin*
*Software Garden*



*Trip Hawkins*
*Electronic Arts*

# DRIVEN BY

MagNet 20X and 30X

The MagNet 20X was one of the first 20 meg SCSI drives available for the Mac Plus, and has proven to be one of the most reliable and popular drives sold. The 20X is reliable because it was designed to run cooler, as much as 30% cooler than drives without a fan. Heat burns the delicate components of your drive and the hotter the drive the shorter the life. The 20X is fast because of our efficient software and clean design. Nibble Mac magazine found out of nine contenders the 20X to be the fastest drive tested. Quality is tested for at every stage of manufacturing and our technicians personally sign off at each step onto a Quality and Assurance report that is included with every Mirror drive.

The MagNet 30X is the perfect choice for the users who feel their storage needs will grow. Priced at $1195.00 the MagNet 30X gives you 50% more storage than our competitors' higher priced 20 meg drives. Both the 20X and the 30X come with backup utilities and optional MacServe networking software (a $250.00 value).

## The Tape Drive The Library Of Congress Chose

The Magnum Tape 20 was the tape drive chosen by the Library of Congress and two of the world's largest accounting firms, Arthur Andersen and Peat Marwick, to back up their Macintosh computers. These groups understand the importance of data integrity and quality: they chose the Magnum Tape 20.

The Magnum Tape 20 was the first tape drive introduced for the Macintosh and since the introduction a good product has only gotten better. Our free software update policy has allowed our users to improve their Tape 20 with features like multiple volume, file by file and incremental (last changes made) backup capabilities. The Tape 20 runs silent and cool to give you the worry-free performance you need.

Magnum Tape 20

## Great Warranty, Stellar Service.

Mirror Technologies has always striven to be the leader in the Macintosh storage market. In January of 1986 we were the first in the business to introduce a one year warranty. Customer service is a high priority and ours has gained a reputation for being second to none. We consistently get letters from people like W. D. Ball of Syracuse, NY, who wrote "The main reason I will continue to seek and purchase Mirror Technologies products is because of your service technicians and the quality of service and support I have received." It's satisfied customers like this that have given our customer service department its quality reputation.

## The Original 800K Drive

Mirror Technologies was the first company to introduce an 800k drive for the Macintosh. (We even beat Apple.) Since then we have satisfied thousands of customers with the speed and value of the best built drive on the market. MacWorld magazine said the Magnum 800 "comes with several features the Apple drive lacks." Features like a one year warranty, and a push button manual eject in addition to the auto eject. The Magnum 800 is compatible with the Mac 128, 512, and Plus. Reading and writing 400k or 800k diskettes. Quiet, fast and priced far less than the Apple drive, the Magnum 800 is the perfect value for your Macintosh system.

Magnum 800

# QUALITY

MagNet 40/40

## Power, Performance And Security

The MagNet 40/40 hard drive with tape backup offers speed, dependability, multiuser software, plus peace of mind. Perfect for big applications like desktop publishing. CAD, CAM and financial modeling where large storage and data integrity are crucial. The MagNet 40/40 connects directly to your Mac Plus via the SCSI port or to your Mac 512k by adding our fastport. The 40/40 allows you to backup by volume, by individual file, or incrementally (last changes made). With the incremental capability you can backup most daily work in under four minutes. Every 40/40 includes MacServe™ networking software from InfoSphere to give you Multiuser, Multitasking and a host of other features. The MagNet 40/40 is the drive of choice for companies like GTE, Apple and Blyth Software (the developers of the powerful OMNIS database). These are just a few examples of users with large storage needs and crucial data.

## Drive Forever

MagNet 85X and 172X

The MagNet 85X and 172X hard drives combine blistering speed and enormous capacity with tape backup and multiuser/multitasking software. Now an entire office of Macs can share data and peripherals for maximum performance and efficiency. Using voice coil technology these high capacity drives are three times faster than standard hard drives. The 3M 40 meg tape backup in the MagNet 85X and 172X give you peace of mind knowing your data is secure. The MagNet 85X and 172X are compact, quiet, and powerful alternatives to the AST 4000. The 172X has two times the drive capacity for the same price as the 4000 drive.* Coupled with our standard one year warranty and toll-free support, our "super drives" will satisfy your hunger for power no matter how big the appetite.

## Good Companies Run With Mirror

We ship more Macintosh drives than anyone in the industry. (Except of course for our friends at Apple.) Because of this, Mirror Technologies has thousands of satisfied customers worldwide. Our corporate customers read like a roll call of the Fortune 2000. Companies like Honeywell, AT&T, 3M, RCA, Apple, GTE, Kodak, Motorola, and DuPont. We also include amongst our fans the nation's top research labs, places like Bell Labs, Cray Research (the developers of the world's most powerful supercomputers), Lawrence Livermore Labs, Rockwell Shuttle, NASA, and Control Data. Practically every major university in the United States uses Mirror drives, institutions like Harvard, MIT, Princeton, Cal Tech, Stanford, Duke, Dartmouth, Columbia, Cornell, and Yale.

Mirror Technologies drives also run on thousands of Macs for companies, and persons with aspirations to be great, companies like Don's Dog Service, Anderson's Nursery, Ads Up Inc. and even Australian Himalayan Expeditions Inc. Small companies with an eye to getting big. Why do we have so many satisfied customers? We believe that it is because of the commitment to quality and service that is included with every Mirror drive shipped.

**MIRROR TECHNOLOGIES** Inc.

2209 Phelps Road, Hugo, Minnesota 55038
612-426-3276

Circle 406 on reader service card

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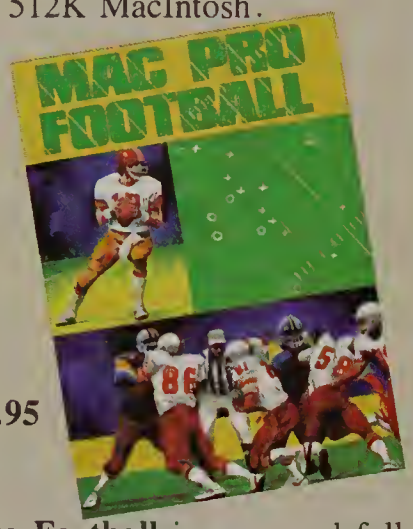
*Based on November 1986 suggested retail pricing.

Down...
Ready...
Set...
Hut... Hut!

Take 40 Super Bowl teams, add a billion play combinations, throw in the ability to set a game at any point and create your own weather, top it off with an accurate system of recording plays and stats, and you have **MacPro Football**, the first team sports game created exclusively for the 512K MacIntosh.

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**MacPro Football** is crammed full of features and those details missing from other games: the opening coin toss, draw-your-own pass plays, four quarterback plays, zone and man-to-man defenses, and a computer coach as good as Lombardi! Whether you're a Sunday coach or a Monday morning quarterback, **MacPro Football** is the ticket to football excitement!
Watch for future disks with more famous teams, complete seasons, and programs to create your own teams and save stats!

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microcomputer games DIVISION

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**David Bunnell**

One of the people on my list is John Sculley, chairman and CEO of Apple Computer. Sculley wins a Personal Computer Achievement Award for leadership.

In 1986 he successfully brought Apple back to the forefront of personal computing. Apple not only launched the Mac Plus, and virtually created a new market with desktop publishing, but the company also turned in record quarterly earnings and once again became the darling of Wall Street. All this at a time when its main competition, IBM, was receiving a severe battering in the marketplace.

The next award goes to John Warnock, president of Adobe Systems. He is making PostScript the standard page-description language of most laser printers and thereby helping to spread the gospel of desktop publishing throughout the world. He wins the Bunnell Peace Prize this year.

Similarly, Paul Brainerd, president of Aldus Corporation, wins the Literature Prize for coining the term *desktop publishing* and for creating *PageMaker,* which became the *1-2-3* of 1986. *PageMaker* is the program that proved once and for all that the Macintosh can be a highly productive tool for creating documents, newsletters, and even magazines such as *Publish!*. Brainerd deserves a full page in the history book of personal computing.

Moving along in my personal awards ceremony, a plaque goes to Burrell Smith, vice president of engineering at Radius, for designing the Radius large-screen monitor for the Macintosh. To my mind, this was the most exciting hardware product of 1986. Smith wins Bunnell's CRT kudos for this second major hit: his first was helping to engineer the original hardware for the Macintosh.

Then we come to Jean-Louis Gassée, vice president of product development for Apple Computer. Jean-Louis receives an award for his vision of future personal computer development.

Thank goodness Jean-Louis has a vision, because Apple needs it. Sometimes his notions do not seem relevant to anything in particular, but the important thing is that he has a vision and that he expounds it so well.

Next I solemnly canonize Bill Gates, chairman of Microsoft Corporation, for championing CD ROM—for having the foresight to recognize the significance of this new information technology and for actively campaigning to make it happen. I also applaud him for steering the effort to take Microsoft public in what has probably been the most successful public offering in corporate history.

Gary Kildall, founder of Digital Research and president and founder of KnowledgeSet Corporation, makes the awards list for being the hands-on activist behind CD ROM and for creating many of the tools that make it all possible. He wins my Science Prize.

Another real winner is Rod Canion, president and CEO of Compaq Computer. I applaud him for his bold strike of announcing Compaq's amazing 386 machine before IBM's, and for successfully steering Compaq Computer through the difficult waters of the compatibles world.

Michael Dell, president of PC's Limited, wins my stamp of approval for pioneering the mail-order PC-clone and PC AT-clone business—and for proving that there can be other channels for delivering products besides computer stores and direct sales to large corporations.

Kevin Jenkins, president of Hercules Computer Technology, wins for having established Hercules as the graphics standard on the PC and for promoting the RamFont text mode of the Hercules Graphics Card Plus.

Dan Bricklin, cocreator of *VisiCalc* and president of Software Garden, wins Best of Class with *Dan Bricklin's Demo Program*. In fact, Dan is his own best demo. He wins for bringing out his second big software hit and for proving that his true value to the industry is really the gray matter between his ears and not just his past achievements.

And finally there's Trip Hawkins, president of Electronic Arts. He scores for continuing to be wildly successful in the so-called nonexistent home computer market. Recently, Electronic Arts racked up four awards at the Software Publishers Association meeting in Washington, D.C.—for best creative product, best graphics, best sound

*(continues)*

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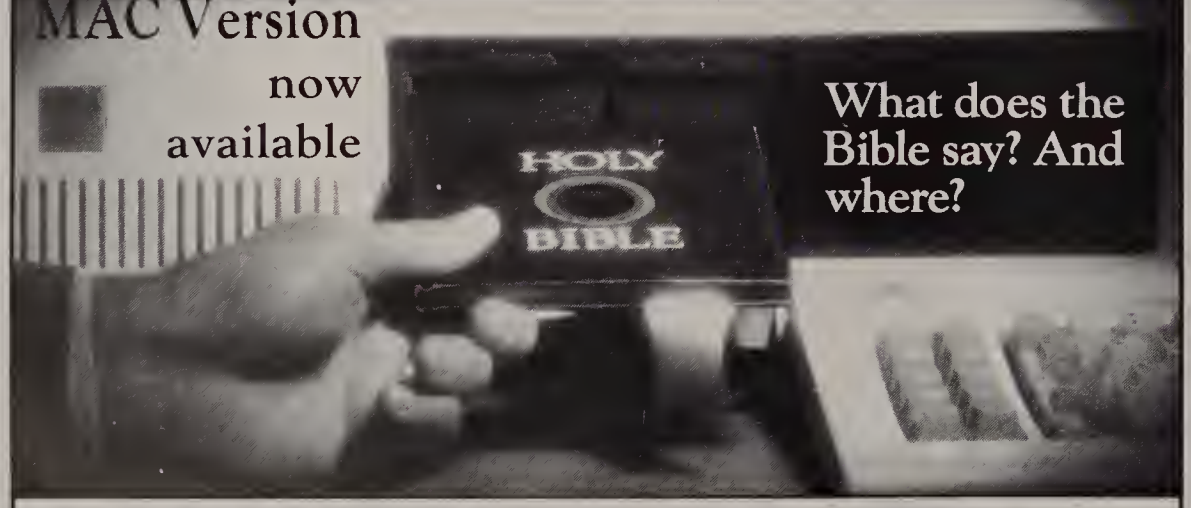


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**David Bunnell**

effects in music, and best computer adaptation from the original. Trip is certainly one of the brightest minds in the industry.

These are the winners of the first annual Personal Computer Achievement Awards.

Now, as I read the tea leaves, flip through the tarot deck, and gaze into the crystal ball, who are some of the people to watch in 1987?

Here are a few of my hunches:

Jonathan Sachs, cofounder of Lotus Development and creator of *1-2-3*. Will his *Manuscript* word processing program for Lotus be a major hit like *1-2-3?*

C. Wayne Ratliff, chief scientist of Migent and creator of *dBase*. Wayne's bold move from Ashton-Tate almost earned him a place on the top 12 list for 1986. This year, we'll see if he can come up with a hot data manager that will make his former creation obsolete.

Philippe Kahn, president of Borland. Expect Philippe to gain wide recognition for introducing a truly revolutionary and astonishing new program. Even though he's had good programs like *SideKick* and *Turbo Lightning*, his fame has come about largely because he created a new, low-cost software marketing approach. Now Philippe is going to soar to new heights of software success.

Andy Hertzfeld. Andy nearly made my 1986 list of winners because of his involvement with Burrell Smith at Radius. Andy is the software genius who created *Switcher* for Apple Computer, and he's a man from whom you can always expect the unexpected. There may be some pleasant surprises from him this year.

Next, but not least, there's Steve Jobs. Because he's Steve Jobs, and he's still a major force to be reckoned with. For that we should all be "insanely grateful."

I'd like to see all the players have a great year ahead because I believe that overall, 1987 is going to be so fantastic that it will cover any mistakes we might have made.

See you at next year's Personal Computer Achievement Awards. And remember, I'd love to hear from you. I'm open to nominations. □

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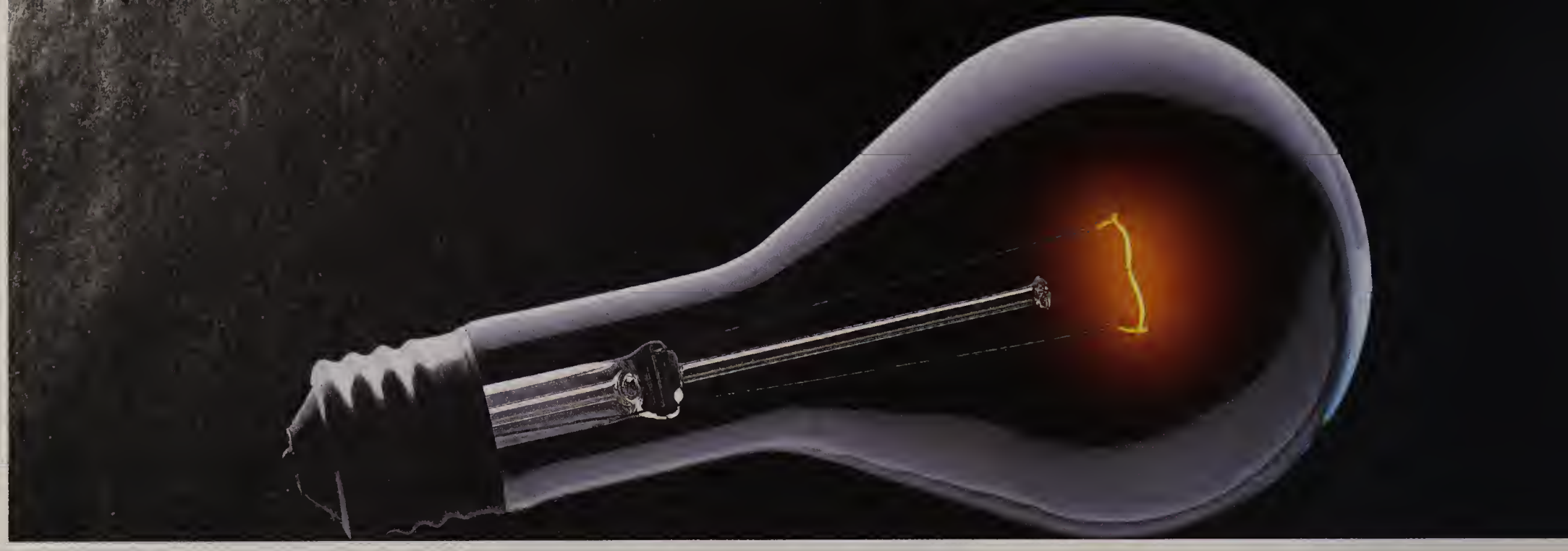

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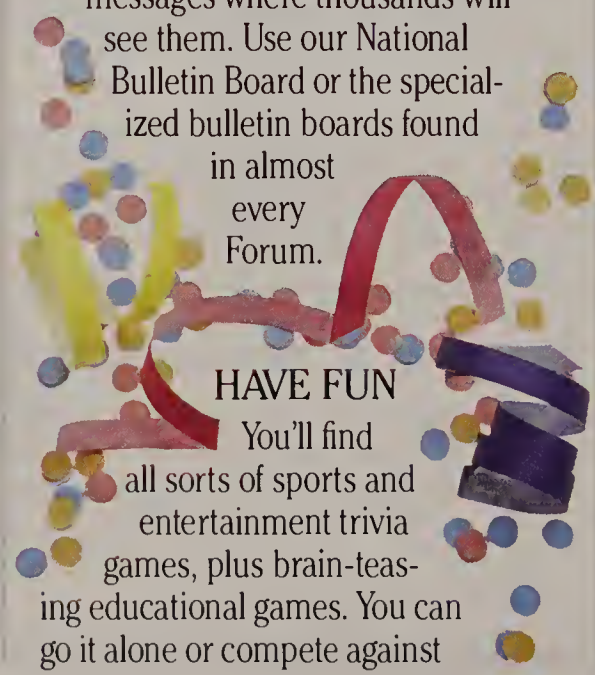

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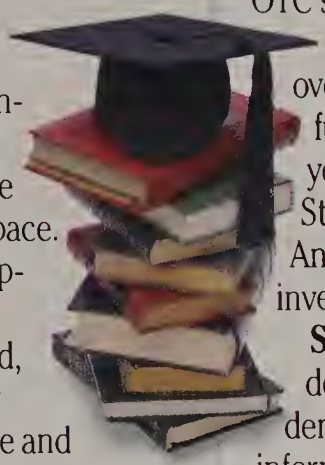

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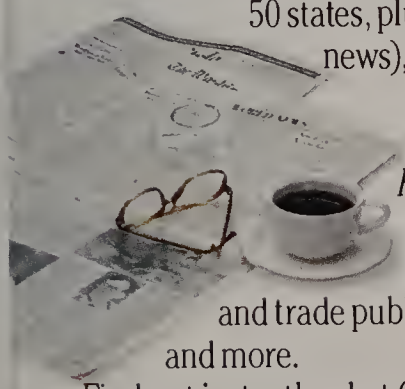

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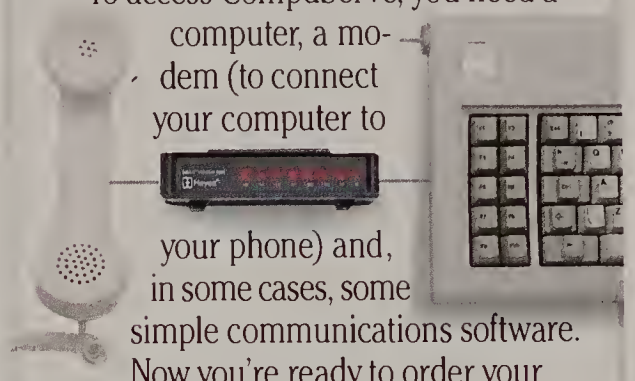

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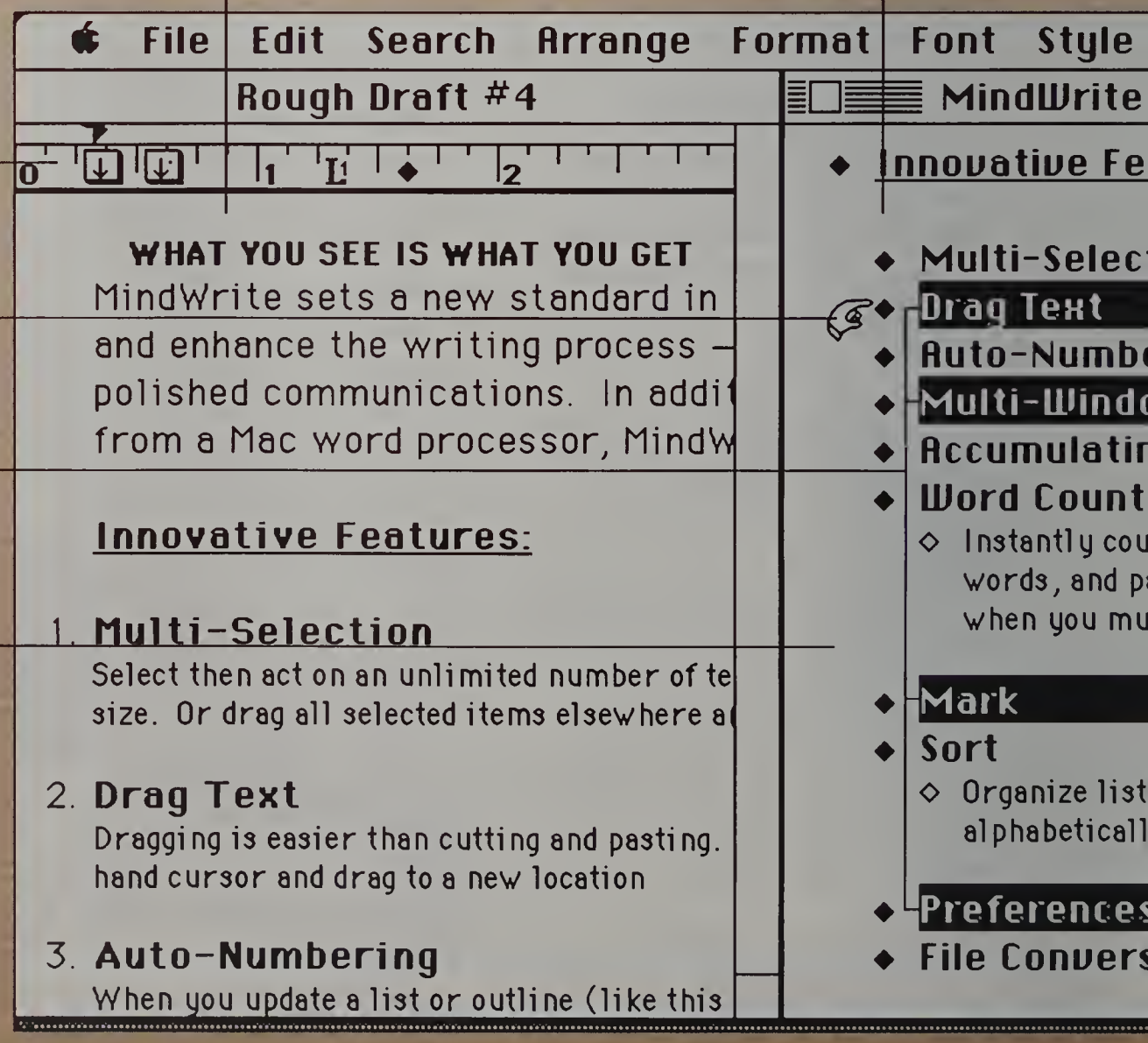


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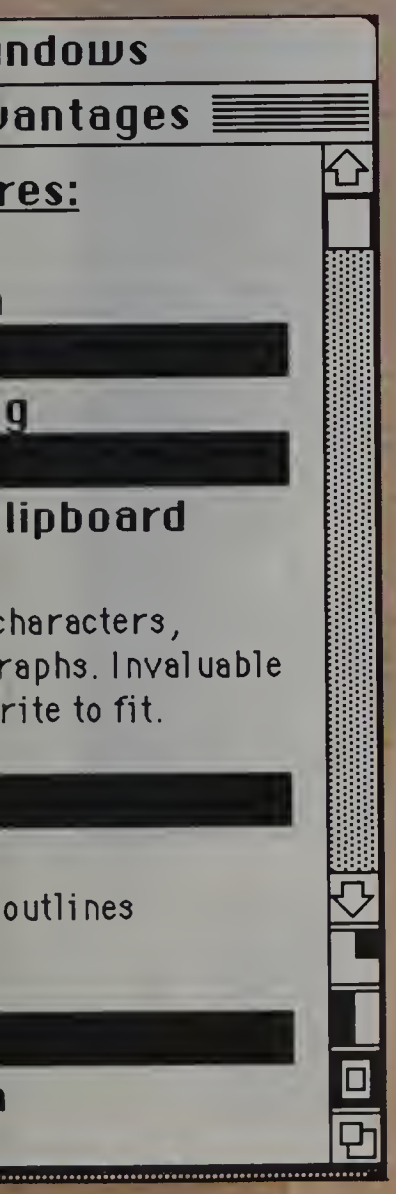

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### Invite the relatives

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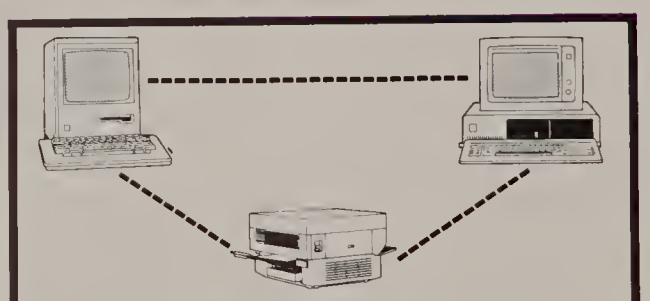

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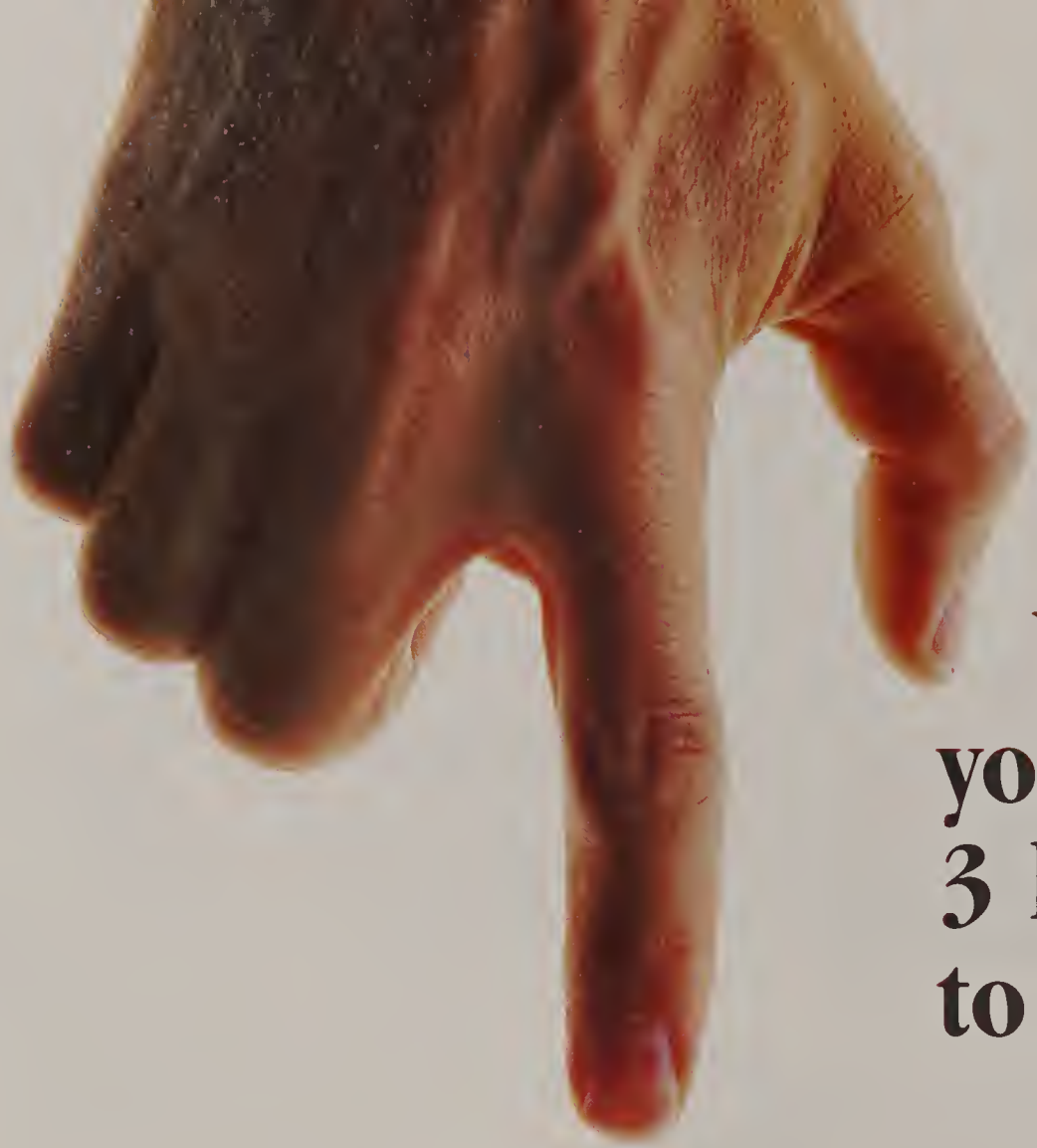

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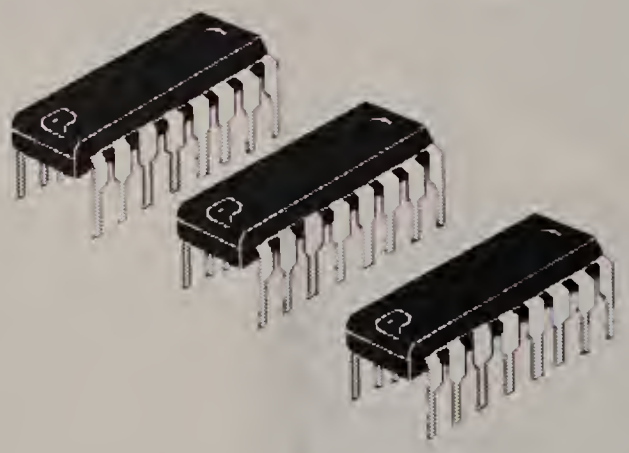

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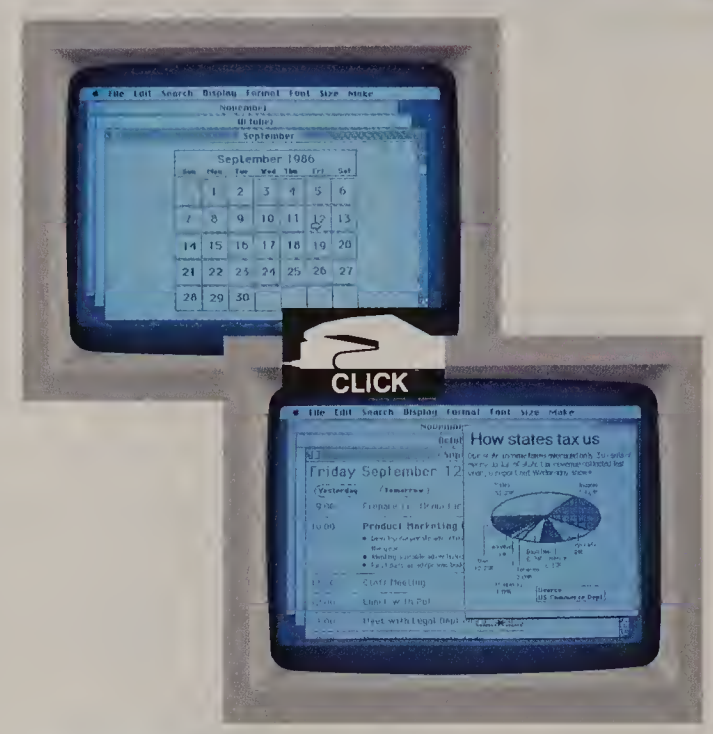


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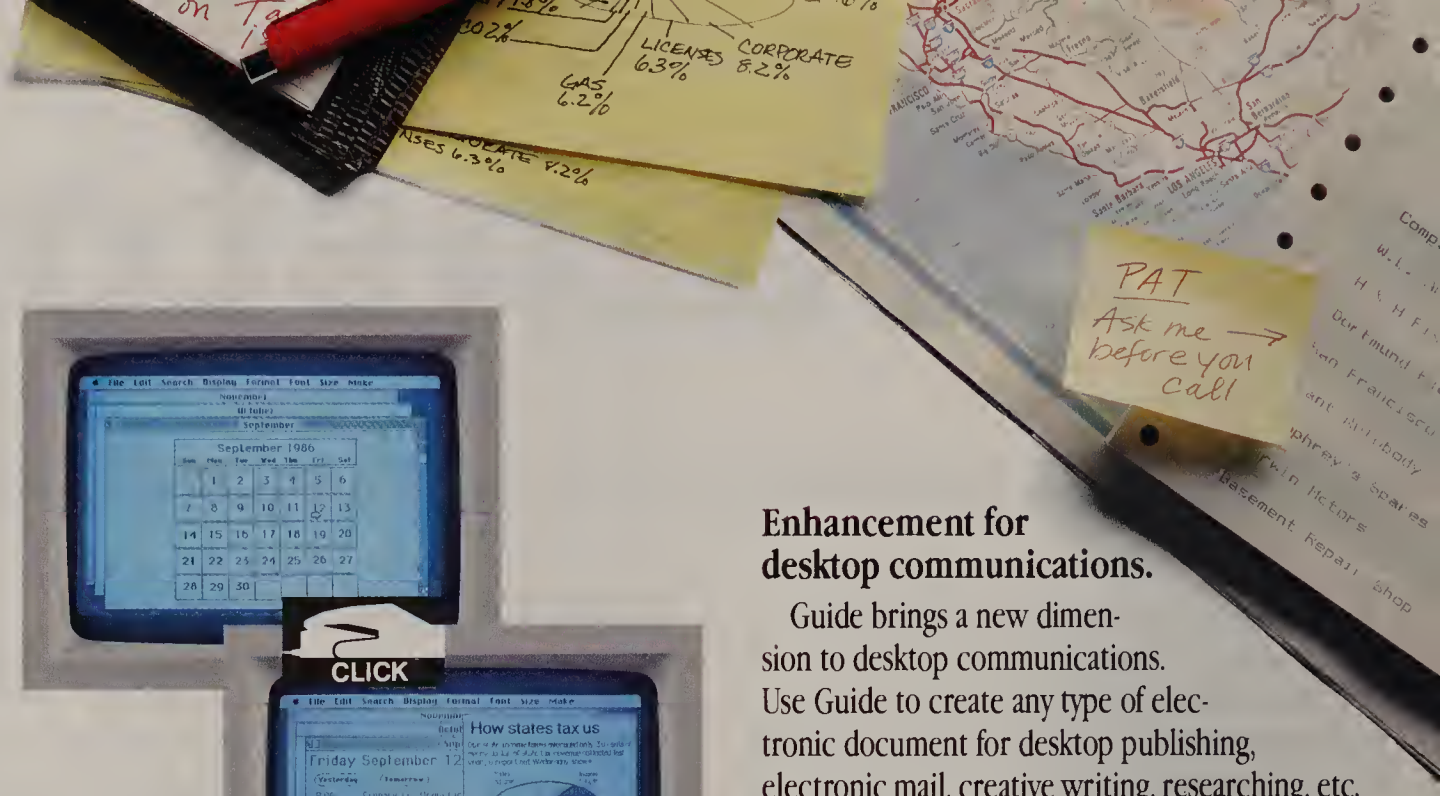


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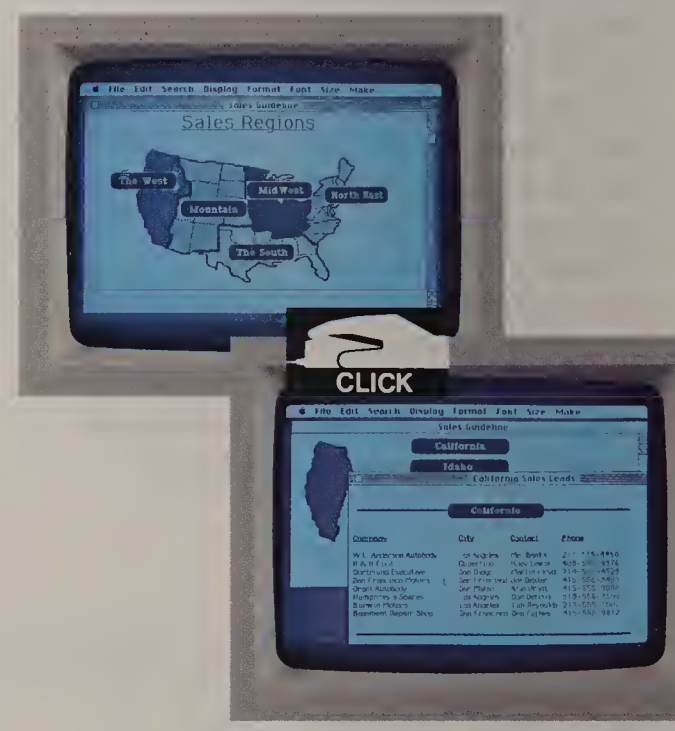


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# Letters

## *A forum for Macworld readers*

**Academic Debate**
I have no idea what Blake Lee Spahr is complaining about in his September letter when he writes that neither *MacWrite* nor *Microsoft Word* is adequate for preparing scholarly papers or books. Having completed a 375-page book manuscript and numerous papers in my first year as a Macintosh owner, I couldn't be happier about the performance of *MacWrite*.

On the other hand, I strongly endorse David Bunnell's criticism of documentation and other customer support. When I try to find something through a manual's index, too often my search ends in total frustration. And a lot of the commercially published guides turn out to be either arrogant or cloyingly cute in style.

*Gerhard Rosegger*
*Case Western Reserve University*
*Cleveland, Ohio*

**Word Processing in the Ivory Tower**
While I agree with Blake Lee Spahr [*Macworld, Letters,* September 1986] that word processors for the Mac are not yet sophisticated enough, I disagree with the notion that programmers and marketing people already know what we want. We must ask for what we need so that they can focus their limited time and money in those areas.

For example, *Word* does not allow automatic footnote numbering if the same citation must be referred to again in the paper. The necessity for this capability in our area of scientific writing makes the entire footnote facility useless for our work. Others who publish in the same journals have the same problem. In addition, negative numbers (such as −0.2) are treated as if they were hyphenated words and might be broken at the end of a line. I have written the company with my suggestions. If we make specific comments to the publishers, the ball is in their court; if they respond, they will have more sales and we will have better programs.

*Peter Mahowald*
*Stanford Electronics Labs*
*Stanford University, California*

*Keep an eye out for the new version of* Microsoft Word *and other new options for word processing. Somebody out there is listening.—Ed.*

**A Tip along the Way**
Steve Brecker's *Waystation,* reviewed in "Gems from the Public Domain" in your August 1986 issue, is a dynamite program for quick access to applications and utilities, especially on a hard disk. Here's a trick that makes it even handier: duplicate *Waystation* two or three times and give each copy a new name. Then have each copy call the others; that way you can have many more than 27 applications in this Finder substitute.

*Ken Moore*
*Spring, Texas*

**Macworld from A to Z**
When I bought my Mac in April 1985, I was so impressed with *Macworld* that I ordered all the back issues. Now that I have a complete set, how about a really comprehensive index? Even better, make it available on disk as an *Excel* or *OverVue* file.

*Howard Replogle*
*Concord, California*

*Great idea. We'll look into it. For now, though, you can find items from back issues in the annual index, published in this issue and in January of each year to date.—Ed.*

**In Praise of Support**
Living Videotext's support should serve as an example for the industry. If every software publisher had such knowledgeable people at the other end of the phone and a disk-replacement policy that allows users to hold onto their original until receiving the new disk, piracy would be a minor problem.

*Terrence M. Walsh*
*Chicago, Illinois*

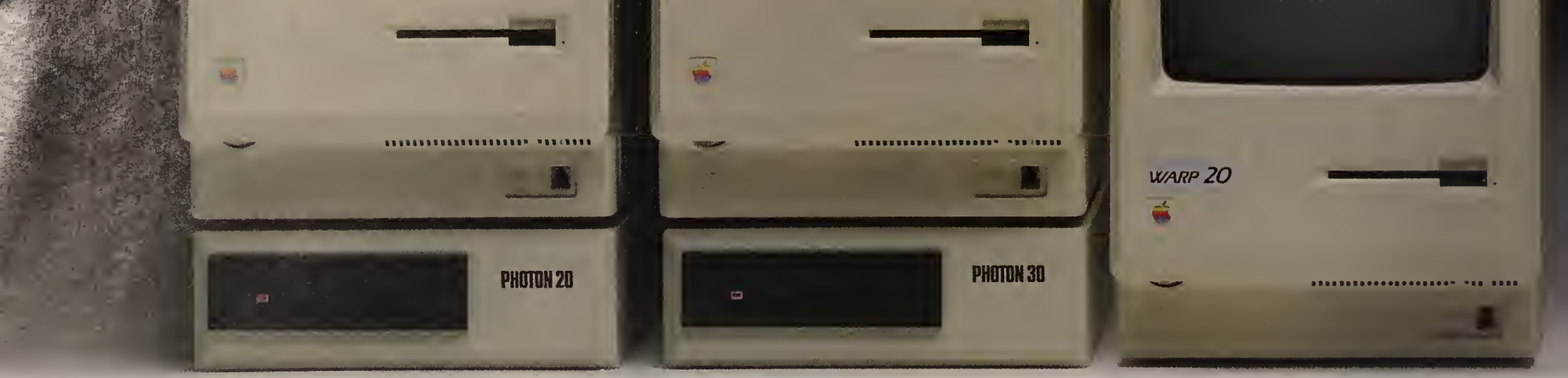
**Proficient LaserWriting**
I tried the suggestion in the September *Macworld*'s "Proficient Pagemaking" for printing a bleed page on the LaserWriter, but some details were missing from the instructions.

The LaserWriter does not automatically create a ¾-inch border; the default border depends on the paper size you use. When you take a letter-size document formatted to fit within an 8-inch width and try to print it on legal-size paper, the edges of the document are cut off.

*Abby Mintz*
*San Jose, California*

*See "Insights on the LaserWriter" in this issue for more tips.—Ed.*

*(continues)*

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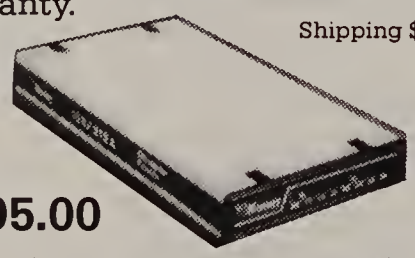

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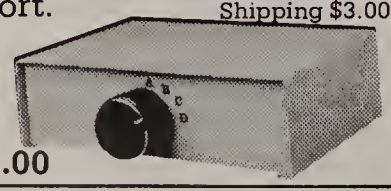

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## Letters

### Judge MacTerminal by Its Function

In article after article, *MacTerminal* draws harsh criticism ["Room for Improvement," July 1986]. Software should be judged by how well it solves the problem it was designed for, and *MacTerminal* emulates terminals very well. Even the prerelease version of *MacTerminal* could fully emulate the VT-100, enabling me to run DEC's powerful editor, EDT, while the early version of *Versaterm* and the last version of *Red Ryder* (6.0) could not. For many months *MacTerminal* was the only program suitable for my needs, and it still does some things better than any other program I've tried. Besides, the most user-friendly software in the world can't transform CompuServe into a Mac; once you log on it's still arcane CompuServe.

*Phil Wilmarth*
*Berkeley, California*

### Another Emulator Heard From

The article "Mini and Mainframe Connections" in the July 1986 issue overlooked our *Mac2624,* which allows the Macintosh to emulate a Hewlett-Packard 2624 terminal. The *Mac2624* package includes an intelligent file-transfer facility, which allows you to convert text, graphics, and data files between HP and Mac applications and to back up files from the Mac to the host computer.

*Denise M. Girard*
*Product Marketing Manager*
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*Austin, Texas*

### Credit Due Accounting Guide

I commend you for Steve Mann's first-rate "Accounting Software Buyer's Guide" in the September issue. The article was comprehensive and allowed me to review a wide variety of programs quickly and simply. Your work saved me time and effort and allowed me to get my new Mac Plus on line quickly.

*William E. Mooz*
*Santa Monica, California*

### Take Another Look at Word Handler

The October 1986 review of *Word Handler* contained an error that is quite unfair to the program. The review states that *Word Handler* does not accept graphics. That is not so! Although you can't paste graphics in through the Clipboard as with most Mac programs, you can use a desk accessory such as T/Maker's *ClickOn Worksheet* to produce graphs that can be pasted

*(continues)*

# W·O·R·D HANDLER

## Word Processing for the Macintosh™

### POWER

**Word Handler**™ is a powerful, full-function word processor for the 512K Mac and beyond.

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- Fill-in feature for personalized form letters and documents.
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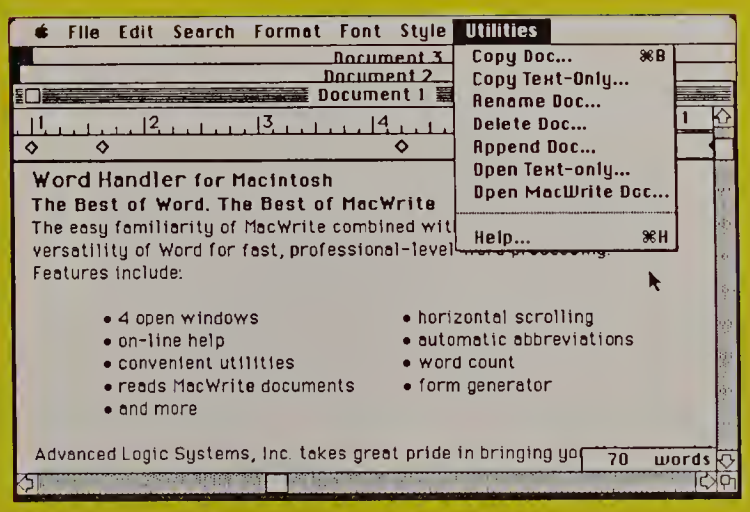
- Word Count lets you know how much you've typed.

## The Best of Word™ The Best of MacWrite™ for only $79.95




Compare our features then compare our price. We're sure you'll agree that Word Handler is the best word-processing value available today.

### EASE OF USE

**Word Handler's** pull-down menus and dialog boxes take full advantage of the user-friendly Macintosh environment.

- Horizontal scrolling makes it easy to view and edit a document larger than the window.
- Use the convenient Utilities menu (shown at left) for a quick and easy way to rename, delete, copy documents and more.
- Store frequently used words and phrases with Word Handler's Abbreviation facility to avoid repetitive typing.
- Open fully-formatted MacWrite documents.
- Advanced scrolling options.
- Help is always available at a touch of the mouse.

**Special Trade-In Offer for MacWrite Owners:**

For a limited time*, you can get Word Handler direct from ALS for the astoundingly low price of **$29.95!**

Just put your original MacWrite master disk in an envelope along with the coupon from this ad and your check for $29.95 and send it to Advanced Logic Systems, Attention: ALS Word Handler Offer.

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**Circle 525 on reader service card**

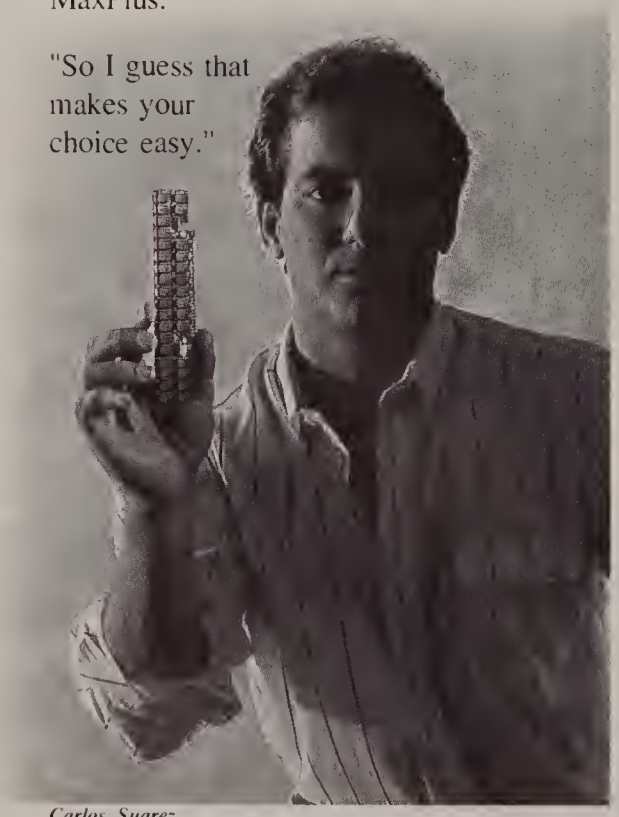
*"Some choices are hard, some are easy.*

"When we designed the MaxPlus™, we had a lot of hard choices to make. Engineering or economy. Just hardware or a complete system. Apple™ standard or not. We must have made the right choices, because the MaxPlus has become the best-selling Macintosh™ memory product ever.

"We decided to put our money into the same SIMM technology that Apple chose, so our boards would plug into the Macintosh Plus without modification — and still be expandable. With a two-year warranty. But hardware wasn't enough, so we included MaxRAM™ and MaxPrint™ RAM disk and print spooler software to put the memory to work. And we added the MaxChill™ piezo-electric fan, too, so the Macintosh Plus could actually be more reliable *with* the MaxPlus than without.

"The result is a complete system that will help you get your work done faster. Whether you use large memory-intensive programs, or need to run several programs fast, you'll be more productive with the MaxPlus.

"So I guess that makes your choice easy."



*Carlos Suarez*
President & Co-Founder

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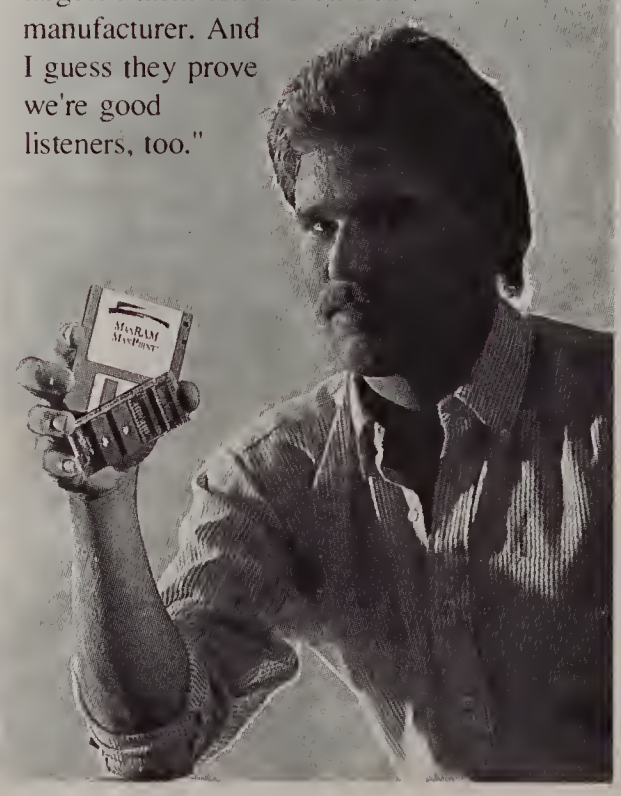
*"Our users tell us what we want to know. So we listen to them.*

"Here's an example. Our MaxRAM™ and MaxPrint™ became the world's best-selling RAM disk and print spooler software, because they let users work 10 times faster than with a floppy and put an end to waiting for the ImageWriter. But RAM disks had a problem — one bomb and the data was gone. So when some people told us this was why they'd never use a RAM disk, we looked for a solution. Enter MaxSave™.

"MaxSave is the first and only internal recoverable RAM disk system for the Macintosh™ Plus.We combined hardware and software so our users could enjoy the speed without worrying about the crash. If and when the Macintosh bombs, they press reset and recover their data *intact*. Not bad for $119. And of course they get a full two-year warranty.

"So we wanted to pass that information along. After all, it's solutions like MaxSave that have made MacMemory the world's largest Macintosh add-on board manufacturer. And I guess they prove we're good listeners, too."



*John Foley*
Executive Vice President & Co-Founder

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into *Word Handler*. You can also paste *Excel* charts into the Scrapbook and then into *Word Handler*.

*Word Handler* also works with the Mac Plus's numeric keypad, unlike *Microsoft Word* version 1.05. That makes *Word Handler* much more convenient for people who work with lots of numbers, as I do. And the program is not copy protected.

I agree that there's a need to speed up the program, to improve the Undo command, and to allow ruler adjustments directly from the screen. For the money, however, *Word Handler* is an excellent word processing program.

*Hugh Naylor, M.D.*
*Raton, New Mexico*

*Advanced Logic Systems has already issued an upgrade to its word processor. See* Updates *in this issue for details.—Ed.*

**Buy a Safety Net for Apple Hardware**

My mouse lasted two and a half years before its little feet gave out. I had even started to wear down the bottom of the mouse itself. I took it to my local computer store and got the whole mouse replaced instantly—no wait, no cost. How? Easy: AppleCare.

AppleCare covers "ordinary wear and tear," certainly the cause of worn mouse feet. I highly recommend AppleCare coverage. I have had two logic boards, an internal drive, a keyboard, and a mouse replaced over the course of two years.

*Brannen Taylor*
*Dumfries, Virginia*

**Wait in Line for a Power Supply Board**

My 1½-year-old Mac has had two power supply boards and is now in need of its third. Locally, Apple dealers can't get enough boards to fix the Macs that fail. Due to the shortage, dealers here provide boards only if they do the installation—at $50 for a simple plug-in operation.

Avoid frustration; ask your dealer to disclose its parts policy before you buy.

*Al Kruger*
*Sunnyvale, California*

**STELLA by Hindsight**

Reese Jones did a good job of reviewing *STELLA* in the September issue, but there are a few points to clear up.

The review says the manual lacks an index and an overview of the program's features. The User's Guide does contain an overview in the form of an extended exam-

*(continues)*



Circle 337 on reader service card

"The Macintosh legacy has only just begun."

"You know, in the last two years, we've come up with a really impressive family of products for what was supposedly a closed machine."

"Right. And now Apple's coming out with an open architecture machine. The possibilities seem endless."

"I wish we could show people what we're developing right now."

"Now, not all our products are good looking. Take MaxChill™."

"Sure it's funny looking. But it's the best thing on the market for keeping the Macintosh™ cool. A cool Mac is a reliable Mac."

"And the best thing is that you don't even remember it's there. It's internal and it's quiet. You don't see it. You don't hear it."

"Remember how hard we worked on TheMax? It was our first memory product, and we wanted to make it right."

"Right. We even spent a lot of time deciding what color the resistors should be. But the engineering really stood out. Clean. Elegant."

"Don't forget reliable."

"We could have cut corners, I guess, but we were determined to produce the best possible product."

"We haven't changed that philosophy, either. The MaxPlus™ stands out in today's marketplace as a standard of fine engineering, fully compatible with Apple's standards."

"Sometimes the recommendations of our engineers are hard to take. They mean spending a little more time, a little more money. But in the long run, it's worth it."

"Then there's MaxPrint™ — a print spooler that works! No one could believe there *was* such a thing, let alone that we were *giving* it away with all our Max memory expansions."

"And you know, we're still doing that. But it has become so popular, we've made it available on its own. MaxPrint is selling bundled with MaxRAM™ — both programs for under $50.

"Maybe that's why it's the best-selling print spooler."

"Desktop publishing is a perfect example of the new generation of Macintosh applications that require more memory to really perform. With our memory products, it takes less time to complete a project."

"Actually, it's less *waiting* time — more *working* time."

"You can get a lot more accomplished."

"Customer support is easy when you have good products. It's easy, for instance, to offer a full two-year warranty on all our products. We've developed a philosophy of going out of our way to keep our customers happy."

"What it boils down to is that when you have a problem you want a solution."

"When we developed the MaxPlus, we knew we had the best 2Mb Macintosh Plus expansion possible."

"But we also knew that hardware was only part of the solution. So we made it into a whole hardware/software system. We included MaxRAM and MaxPrint software so the user could put that memory to work. And added the MaxChill."

"That means the Macintosh Plus could be more reliable *with* our product than without it."

"After all, what really matters here is performance."

# MacMemory

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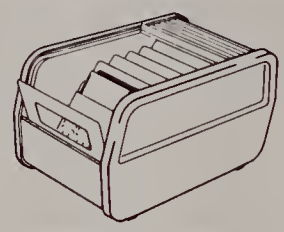

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**Circle 373 on reader service card**




ple and a description of each menu item. And it does have an index; it's possible the reviewer received a prerelease copy of the manual without an index.

Mr. Jones mentioned that the size of a model is limited, partly by available RAM. In fact, a *STELLA* model is limited *only* by the amount of available RAM. On a 512K Mac *STELLA* can accommodate approximately one thousand elements with any number of interconnections, which would not be a practical limit for most people.

Finally, many people who read the article probably thought you can't print what you see in the windows. While *STELLA* does not support the Clipboard, you can print the entire contents of any window to the ImageWriter or LaserWriter.

*Peter Vescuso*
*High Performance Systems, Inc.*
*Lyme, New Hampshire*

### I Was a Teenage Maccer

I am 15 and have owned a Mac for more than a year. Many of my friends have Apple IIs and, with their nifty *Print Shop* programs, make attractive title pages for their school reports. My hand-drawn *MacPaint* cover wowed my geometry class and impressed my teacher. It also got me an A.

Whoever said that TV is the world's best babysitter sure hasn't used a Mac. It has kept my little charges fascinated for hours, thanks to great software like *31 Programs* from Brown Bag Software. I only wish there were more programs for children and teens who use Macs.

*Kristin E. Smith*
*Moline, Illinois*

### Another Ax for MIDI

One problem for Steven Levy in his quest for rock 'n' roll fame ["MIDI Life Crisis," September 1986]: he's a guitarist, not a keyboard player. The next time he shoots for *Rolling Stone*'s "Who's Hot" column, he can do his composing from a MIDI-ized guitar with our Photon MIDI Guitar-to-MIDI Converter.

*Kevin A. Kent*
*K-Muse, Inc.*
*Chatsworth, California*

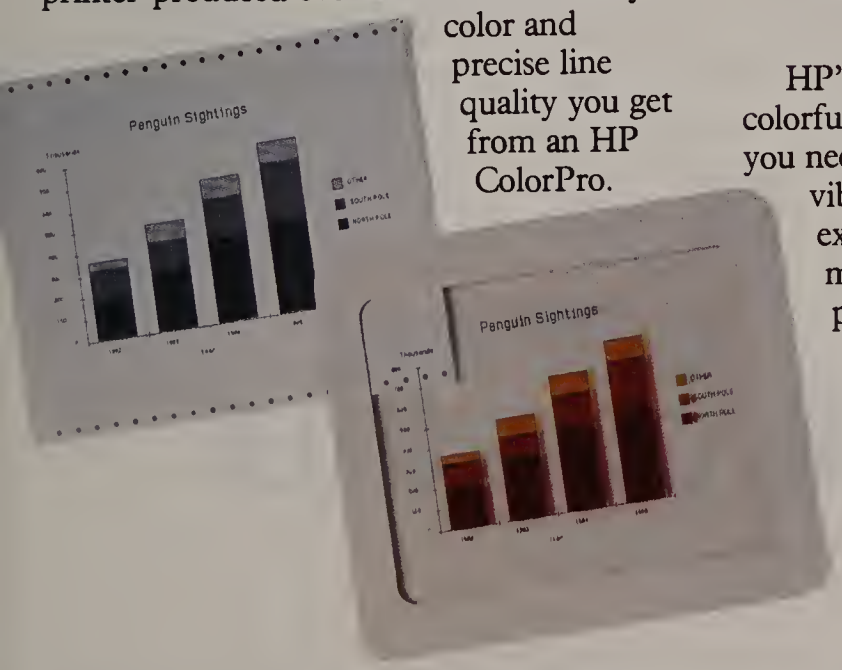
*Letters should be mailed to* Letters, Macworld, *501 Second St. #600, San Francisco, CA 94107, or sent electronically to CompuServe 70370,702 or The Source BCW440. Include a return address. We reserve the right to edit letters. All published letters become the property of* Macworld. □

# You, too, can stand out in a crowd!

Get noticed, applauded — maybe even promoted — when you break away from boring black and white and start using quality, multicolor graphics for your presentations. Team your Mac with Plotstart software and a Hewlett-Packard ColorPro plotter for colorful, professional-quality overhead transparencies. It's quick, easy, and some people even say it's fun!

## Your graphics represent you.

The image you project onto that larger-than-life screen makes an instant first impression. Improvised overheads imply a quick and dirty job. Black and white printer-produced overheads lack the lively color and precise line quality you get from an HP ColorPro.




## Plotstart makes it easy!

Now you can print and plot from your favorite applications software — Apple's MacDraw, Microsoft's Chart or Excel, Lotus' Jazz. Plotstart actually adds a new plotter driver to your software so you can plot directly onto an HP ColorPro. Plotstart automatically defines pen colors and fill patterns based on your graphics. Or when you're feeling creative, you can custom-tailor your graphics.

## Hewlett-Packard's ColorPro makes you look good!

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If you're among the inner-directed, we can help you mold a Macintosh in your own image.

Through HyperDrive 10 and 20—the first hard disks to be installed *inside* the Macintosh and connected directly to its microprocessor.

The resulting Macintosh can, in its own quiet and very unobtrusive manner, outperform any other Macintosh in its class.

It can not only store as much information as 25 or 50 diskettes. But it will also reduce power-up time by 66% over a Macintosh Plus. Load Aldus' PageMaker 150% faster. Microsoft's Excel 250% faster. And so on.

Which should more than satisfy anyone's need for speed. Unless, of course, you need something "lightning fast," which is how Macworld magazine described HyperDrive 2000.

This internal hard disk system also includes an additional microprocessor and a floating-point processor—turning the Macintosh into an authentic number-cruncher. In fact, a Mac with HyperDrive 2000 can perform computations from 10 to an astonishing 250 times faster than a Mac Plus. And it can run far more sophisticated software.

All these HyperDrives can be networked with regular Macintoshes through our HyperNet software. And since they're internal, all three preserve the Mac's portability.

But sheer speed aside, what distinguishes all HyperDrives is the software they're equipped with. Which you can learn more about by consulting the ad on the right.

GENERAL COMPUTER

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The FX/20 and FX/40 are the most outgoing members of the HyperDrive family.

They spend their time on desktops, in the company of other office tools, and connect directly to the Macintosh's SCSI port.

The resulting Macintosh is extremely fast, which will come as no surprise to anyone familiar with HyperDrives. (If you aren't, see the fourth paragraph of the ad to the left.)

Nor is it surprising that our FX series is so accommodating, providing a vast 20 or 40 megabytes of storage.

The real surprise, at least for those familiar with external hard disks, is all the software the FX comes with.

Such as a program that protects your documents by making back-up copies of them onto diskettes.

Another program protects your documents from certain excesses of sociability—denying access to anyone who doesn't know the password you choose.

Still another program automatically queues up documents for your printer, which means that you can proceed on to other jobs without having to wait for your printer to catch up with you.

In short, no other external hard disk does everything that HyperDrive FX/20 or FX/40 does. A distinction it shares with the internal HyperDrives on the left.

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A large claim, admittedly. But not an idle one.

For one thing, *intermail* doesn't demand its own dedicated Mac. It runs totally in the background on a Mac you already have, while you work in the foreground on whatever you like.

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*intermail* is secure—server configuration and mailboxes are all password protected. It's bulletproof, writing all messages to disk immediately. It fully supports internetworks, bridges and multiple zones.

And the cost?
As much as 40%, 60%, even *95% less* than our not-very-nearest competition.

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# Publish Makes Perfect?

*Looking forward to even more goodies from the desktop publishing bag of tricks*

At last. We're well into the second generation of desktop publishing (DTP). *PageMaker, ReadySetGo,* and *LetraPage* (formerly *MacPublisher*) have all added features that address the problems we've had with the first generation of products. New offerings such as *Ragtime* and MacAmerica's *Solo,* and batch-processing programs such as *Just Text, MacTex,* and *Textures* diverge in their approaches to DTP. The newcomers may foment as-yet-undeveloped markets or serve yesterday's dissatisfied users.

Large screens are here, bless their hearts, so we can do page design a page at a time instead of by fragments.

We should be happy, right? Not quite.

Even though we have some of the tools we want, desktop publishing is just sneaking up on real publishing needs. Personal computers still don't have a what-you-see-is-what-you-get capability, despite what you've heard. The type-on display remains merely representational, gray scale is simulated, processing is slow, pages with photographs—not merely line art—are impossible. Not until late in 1987, when third-generation DTP products will debut, will the screen truly match the printed page.

I remember sitting at a terminal at *U.S. News & World Report* in Washington, D.C., in 1980. The magazine had just installed equipment from III and Atex, leaders in the typesetting industry, and I was able to watch black-and-white photographs being scanned in and displayed on screens. Text, photographs, and line art were combined to create an entire page layout. I have been underwhelmed by anything short of that ever since.

Five years later I'm still waiting for a system that does all of that for a price I can afford. Scanners, laser printers, and software are all getting better; I may soon have that long-dreamed-about system on my desk. Without the printer, of course. Although we'll see lower-cost 300- and 400-dots-per-inch laser printers during 1987, the prices will remain steep for higher-resolution printers.

Now that my dreams are about to come true, what if I'm tempted to use the system in my job? Words are fine; I feel comfortable dealing with ideas and their expression. But what about the photographs?

Are my cheeks too red? Maybe I should add a little more color, or take some out? With the next generation of products, I'll be able to do that. I'll have to add a color monitor; a graphics subsystem capable of manipulating the image; a hard disk, of course (3 megabytes per image eat up 20MB drives fast); and sophisticated paint software. OK, I'll spend. After all, this is the publishing industry, and I should have the latest equipment available for the Macintosh. Trouble is, I'm not trained to work on the color in my cheeks or to select typefaces or design the pages. And I really don't know where I'm going to find the time to deal with that level of detail.

Truth to tell, I see *Macworld* being produced much as it is today, even after the third generation arrives. Christopher Burg, our art director, will probably be able to review the status of stories on line; Susan Howard, our designer, may be able to receive art from our artists via AppleTalk, digitize photographs, lay the images out on pages, and flow text around them.

The art department will be able to supply templates for editors. Features editor Adrian Mello will be able to sit down at a large screen and write, while an approximation of the story layout appears. Our production department will love this, because we'll be able to reduce the time it takes to produce the magazine.

But me? I should resist the desire to tinker. My Mac is becoming more impressive, but as in so many other aspects of the real publishing world, the tools take more time than they're worth to use at the quality level we demand. I'll still be writing on the long yellow pages that you can't see, while watching a squirrel outside run across the lawn.

Or maybe the company will buy a large screen for my home. I really could use some more color in my cheeks. □

ED KASHI

*Editor Borrell looks toward the future with John Scull, Apple's marketing manager of desktop publishing, who develops the marketing strategy that leads to sales for the Mac through DTP.*

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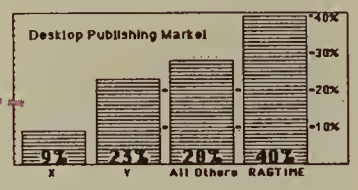
### THE RAGTIME REVIEW

We've taken the four most wanted page processing applications and integrated them into a single, simple, easy to use package - **Ragtime**. Because they are integrated, you never have to leave the program to build your document. All the software modules are right at your fingertips.

Whether you're a secretary just starting to learn word processing, or a top-flite graphic designer, **Ragtime** delivers a complete set of tools that allow any user to create documents which will impress even the most critical of publishers.




You could be the college student preparing a thesis. Or, you might be a businessman developing a crucial proposal complete with spreadsheet, text, and graphic presentations. Perhaps you own a self-service typography, layout, and graphic design studio. Could you be an executive secretary who has typical word-processing needs, but would like to grow to real page processing? Whatever your need, large or small, **Ragtime** is the solution.

From memos to magazines, **Ragtime's** Word Processor is the complete answer for creation of text. As a stand-alone word processor, users can begin with a familiar item like a letter, and quickly grow to complex documents.

Building multiple pages at a time with headlines, multiple columns, variable margins and with optional justification is what we mean by Page Layout, known formally as Desktop Publishing. **Ragtime** easily integrates your word processing text into formatted pages. Without limits, you can grow into a highly sophisticated set of tools for the professional graphic designer.

Since **Ragtime** is fully integrated, it is a simple process to create a form or master, save it for repeated use, or change it at will. You can quickly create any format of any length with ease.

**RAGTIME SALES**

| | QUARTER 1 | QUARTER 2 | QUARTER 3 | QUARTER 4 | FY86 |
|---|---|---|---|---|---|
| USA | 5000 | 4250 | 5275 | 6500 | 21025 |
| AUSTRALIA | 240 | 220 | 265 | 300 | 1025 |
| CANADA | 350 | 335 | 425 | 500 | 1610 |
| ENGLAND | 120 | 100 | 145 | 160 | 525 |
| OTHER | 75 | 75 | 75 | 75 | 300 |
| TOTAL | 5785 | 4980 | 6185 | 7535 | 24485 |

**NOTICE**

Ragtime may be previewed at the following trade shows:

| | | |
|---|---|---|
| Seybold DTP Conference | 9/3/86 | San Francisco |
| COMDEX | 11/10/86 | Las Vegas |
| MacWorld Expo | 1/8/87 | San Francisco |
| Computer Pub Expo | 3/26/87 | Chicago |

Finally... professional results from an easy to use, fully integrated package! **Ragtime** delivers on the promise of personal computing with a complete set of powerful tools for **Desktop Publishing, Forms Generation, Word Processing,** and **Spreadsheet,** all from one package. And, we have remained faithful to the concept of the Macintosh, so that you are truly productive quickly and painlessly.

If **Desktop Publishing** is your application, **Ragtime** delivers like no other software. With **Ragtime,** you will be creating professional materials immediately. And although you have sophisticated tools at your fingertips, no publishing or graphic arts background is required.

Powerful **Word Processing** is included as a natural element of **Ragtime.** This not only eliminates the need for a separate piece of software, but means that you need not re-edit your copy as you try to make it fit into your format. And, the word processor is so complete and capable that it will quickly become your standard.

**Ragtime's** integrated **Spreadsheet** delivers exceptional capabilities. Now you will not only use spreadsheets for financial data, but effortlessly incorporate numeric data into reports, or written copy into spreadsheets. You will easily design spreadsheets with complete flexibility in layout. Or use **Ragtime's** spreadsheet to create standard forms, such as invoices, requisitions, or reports.

A standard **Forms Generator** allows you to design and save any form, of any length, and to change it as you require. You will see the complete form on the screen, ensuring that what you design is exactly what you need. From letterhead to complete financial reports, you can quickly create any format for professional appearance with significant time and cost savings.

Productivity, ease of use, and power. **Ragtime Integrated Page Processing** delivers, in one complete package, the next generation in software. Today. **Ragtime,** the complete solution. See your local computer dealer today for a demonstration.

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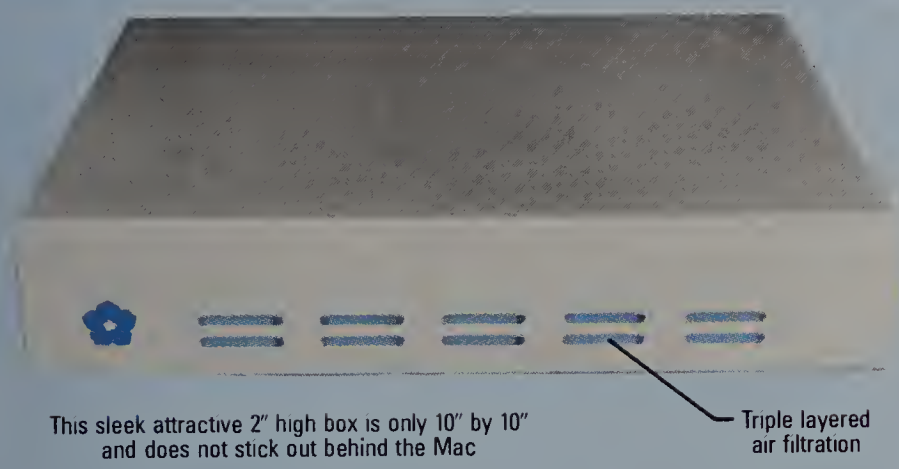
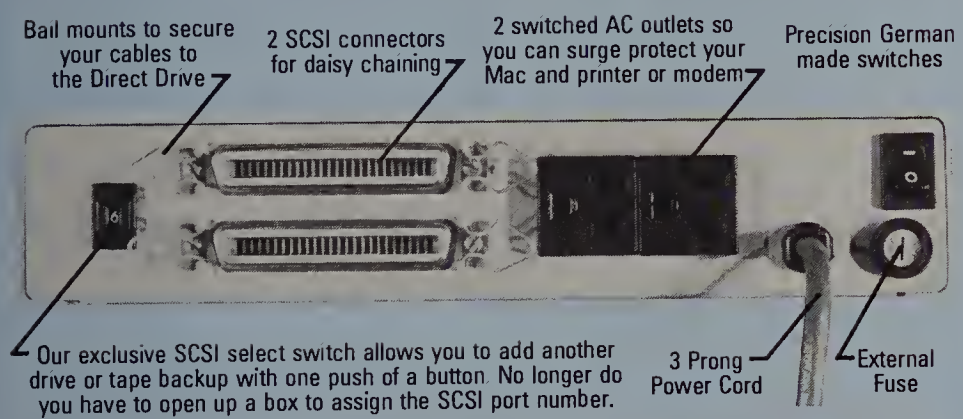
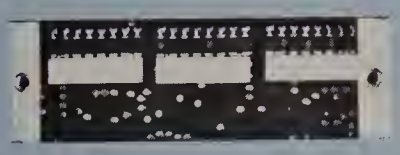
# Nobody does it better . . .

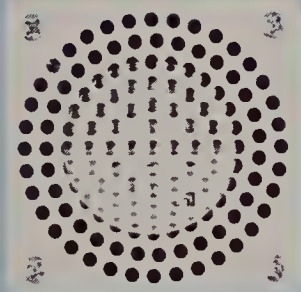


**Removable Panel Underneath Drive**

To add three or more SCSI devices some small plugs called terminating resistors must be removed from the middle units. Jasmine designed this small panel so you never need to play technician and open our box.



Our ultra quiet fan pulls air through the drive and sends it out the bottom

In a world full of experts and overpriced product lines, Mac enthusiasts dream of a company that will give them quality engineering at a price the rest of us can afford. Here's how Jasmine fulfills that dream:

## Only Jasmine

- adds shock absorbers to protect your drive.
- ships your drive with a full P.D. and shareware library.
- tests each drive in real time before shipping.
- includes full 3-way electronic surge protection.
- adds two switched AC outlets at no extra charge.
- features the SCSI device select switch.
- never ***requires*** you to open the box to daisy chain multiple drives.
- includes a 1-year replacement warranty & 30-day money back guarantee.
- offers air delivery service in the Continental U.S.
- offers you the choice of 2-ft. or 6-ft. cables.

The Mac was designed for the rest of us. Nothing complicated. No archaic language. Elegant simplicity.

Then something happened. Users are asked to solder, open boxes and become technicians. In the SCSI drive market, Jasmine finally put an end to that.

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# Contributors Notes

**Daniel Ben-Horin** *("Insights on the LaserWriter" and "Mac Finance Tools") is a San Francisco journalist and computer consultant who works with writers and nonprofit groups. His work has appeared in* The New Yorker, Redbook, *and* Mother Jones, *and he is a regular contributor to* Macworld *with coauthor Charles Seiter.*

**Danny Goodman** *("Up on the Big Screen") is a contributing editor of* Macworld *and the author of a book on advanced* Excel *techniques,* Hands-On Excel, *published last year by Scott, Foresman & Co.*

*Apologies to James Halcomb, whose biographical note was left out of the November issue of* Macworld:

**James Halcomb** *("Mac Business Tools," November 1986) heads a project management firm in Sunnyvale, California. He wrote* The Project Manager's PERT/CPM Handbook *and* Planning Big with MacProject, *published last year by Osborne/McGraw-Hill.*

**Jim Heid** *("New on the Desktop") is a contributing editor of* Macworld *who writes the monthly "Getting Started" column for people new to the Mac. He has written* dBase Mac in Business, *forthcoming from Ashton-Tate Publishing Group.*

**Prasad Kaipa** *("Mac Desktop Tools") is an assistant professor of radiobiology at the University of Utah, where he has been researching the effects of radiation fallout in Japan and southern Utah. He also consults on Mac application programs, especially graphics, through his firm, MacWiz Consulting.*

**Rick LePage** *("Shopping for SCSI Storage") has been writing about personal computers and telecommunications for six years. His interest in the Mac began with an Apple Lisa that landed on his desk for an extended trial. In June 1985, he cofounded the respected newsletter* MacInTouch, *published monthly by Ford-LePage in Framingham, Massachusetts.*

**Steve Mann** *("Building a Multiuser Application") is a freelance writer, product design consultant, and financial systems developer based in San Francisco. He frequently writes on accounting for* Macworld, *including the exhaustive "Accounting Software Buyer's Guide" in the September 1986 issue. He also writes a column for the* San Jose Mercury News *on using personal computers for financial investment management.*

**Charles Seiter** *("Insights on the LaserWriter" and "Mac Finance Tools") is a chemistry professor turned computer writer who telecommutes from his woodland home in Willits, California. His published works include* The Skeptical Consumer's Guide to Used Computers *from Ten Speed Press and books on Pascal and computerized financial planning for Addison-Wesley.*

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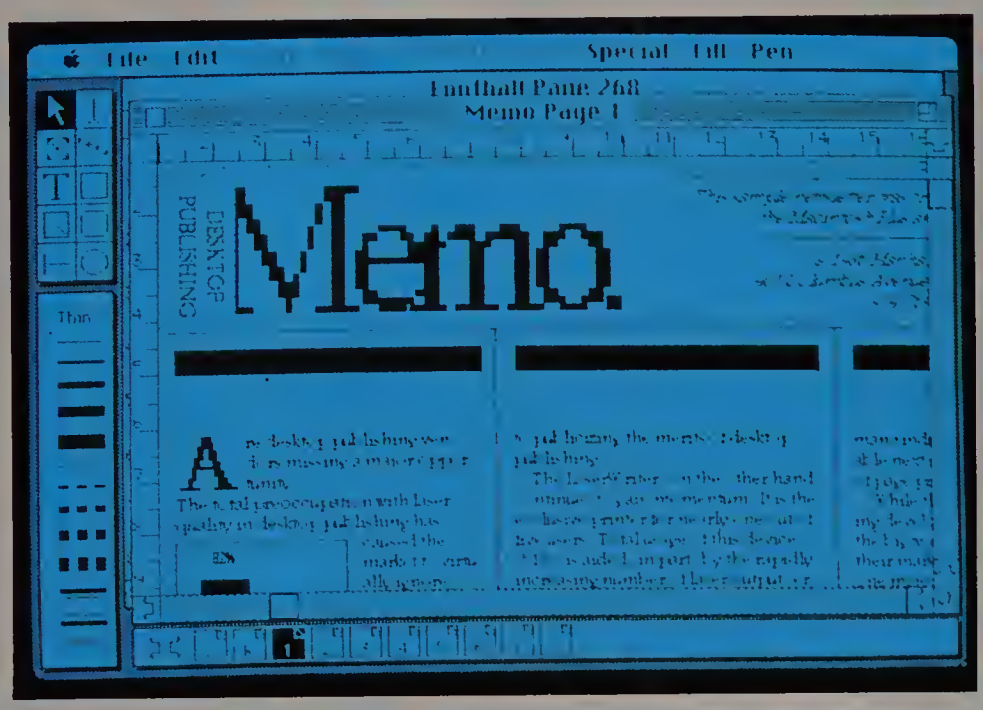


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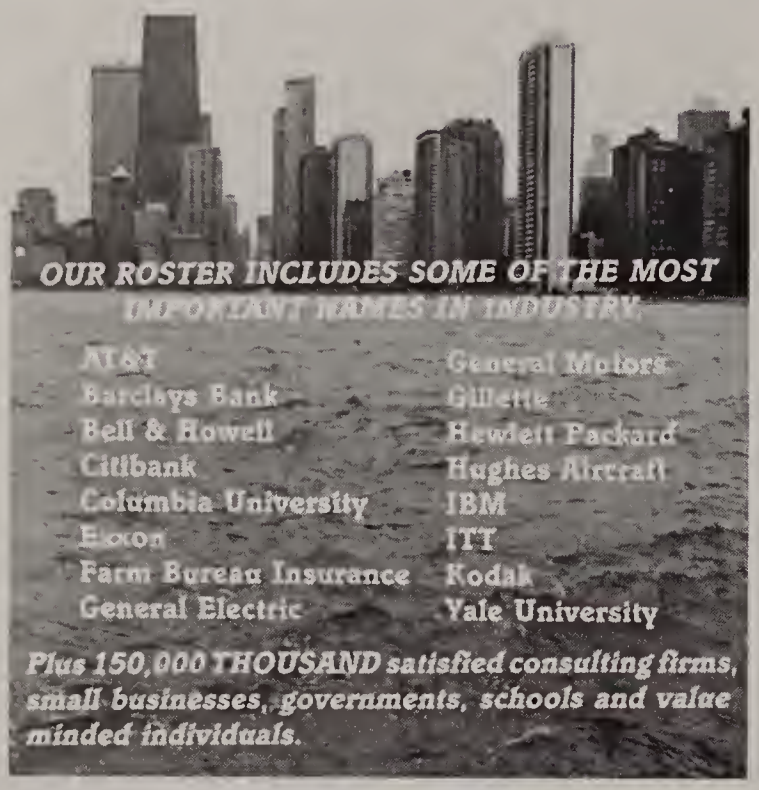


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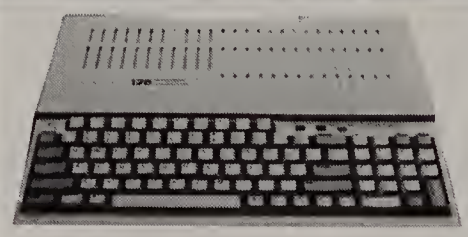

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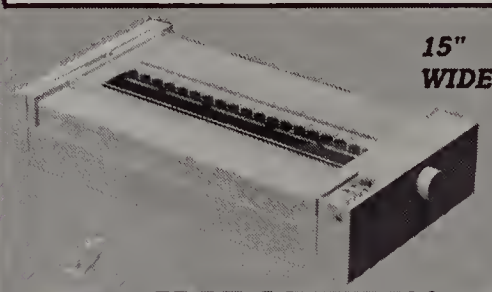

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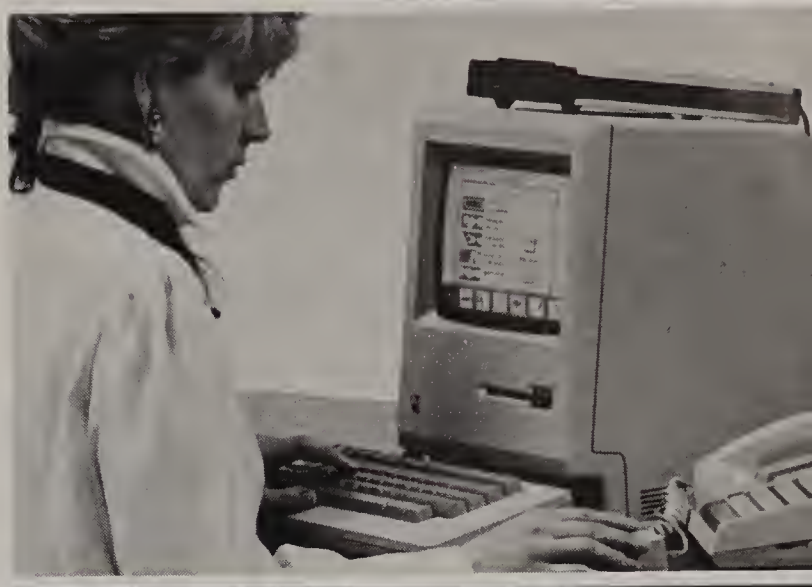

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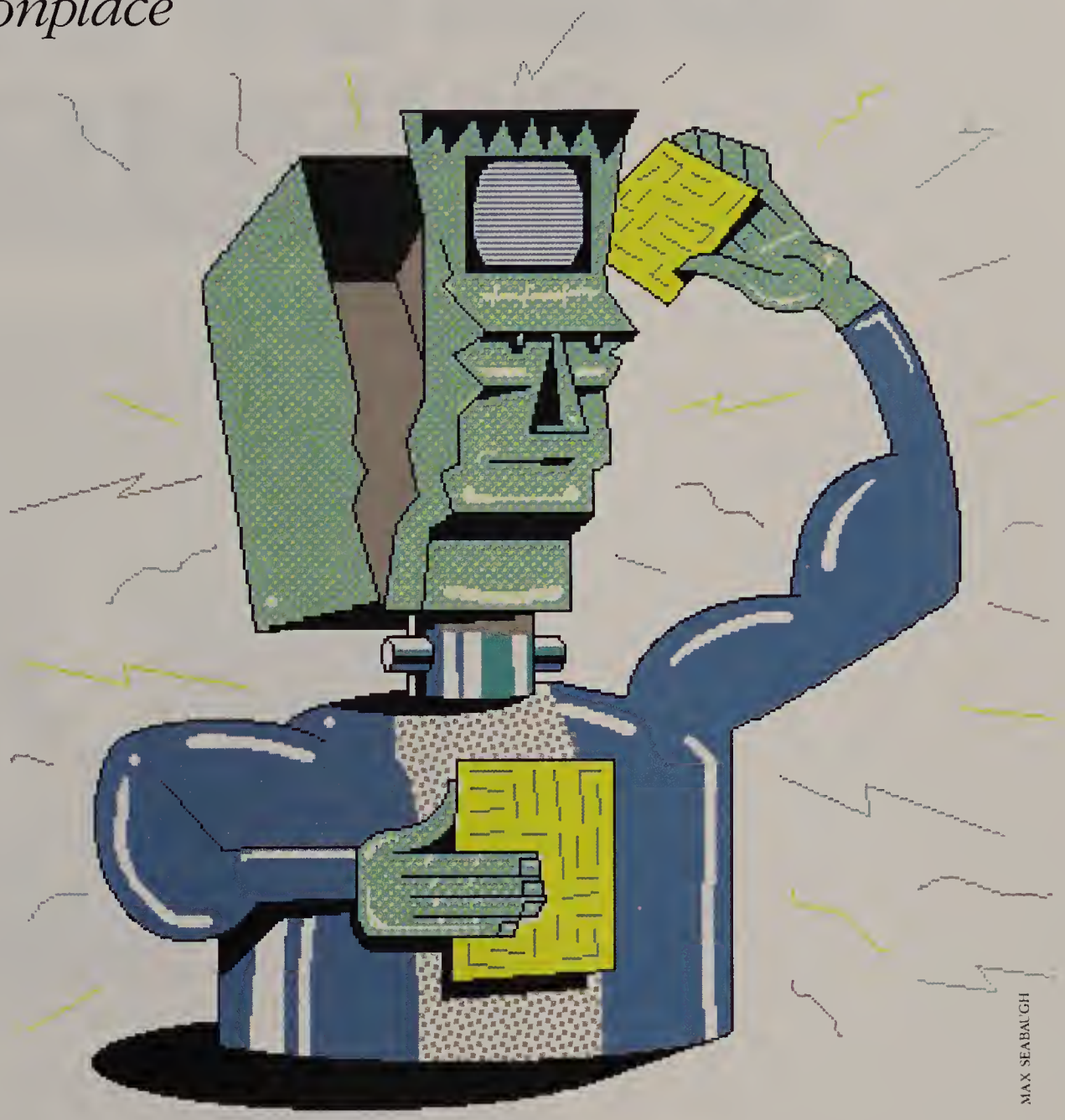
Steven Levy

# A Shut and Open Case

## *How "unauthorized" modifications to the Mac became commonplace*



MAX SEABAUGH

For the next few months, everybody is going to be talking about the brand-new open Mac. This is the computer, not yet announced at press time, that will not only be more powerful than the existing model but will also be expandable. Just as happened with those computer classics the Apple II and the IBM PC, people will be encouraged to open the case and stick in all sorts of circuit boards to enhance their machines. This new approach addresses a much criticized aspect of previous Macs—a closed architecture in which internal hardware modifications were deemed unnecessary.

But an irony lurks here. There already *is* an open Mac. Four of them, to be exact: the Macintosh 128K, the Macintosh 512K, the Macintosh 512K Enhanced, and the Mac Plus. The community of Mac owners, developers, and dealers has ignored the dire admonitions of the manufacturer and begun a lively trade in internal modifications. In essence, a grass roots movement has flipped the lid on the supposedly "closed" computer. The people have spoken: the Mac is open.

At last summer's Macworld Expo in Boston, it was difficult to walk 20 feet in any direction without encountering a product that required installation inside the Mac, whether a memory board, a SCSI port, a coprocessor board, or a video hookup. If you hung around long enough, you could even see people standing by while technicians operated on their machines. The Mac owners had the same worried countenances as parents whose newborn sons were undergoing circumcision, but when the machine was reassembled and the happy face reappeared on the screen, the reaction was invariably joyous.

How common are these products becoming? Rick Green, a vice president of Dove Technologies, which makes memory boards, estimates that *60 to 65 percent* of Mac owners will eventually subject their machines to internal modification.

This is especially remarkable in light of the fact that Apple Computer originally regarded an unauthorized incursion inside the Macintosh case as an unforgivable transgression. The penalty was emphasized with a nearly biblical fierceness: Shunning. Expulsion from the family. Termination of warranty. End of service contract.

Though critics complained bitterly about the inaccessibility of the Mac's innards, Apple's company line was that only hackers and weirdos would have an interest in prying the machine open. The rest of us would have our needs more than satisfied by software solutions.

Which of course did not prove to be true.

### Opening Pandora's Box

The first major incursion was made in late 1984 by General Computer Corporation, which introduced HyperDrive. By hooking to the motherboard, this internal hard disk ran much faster than any drive connected to the "approved" serial port on the back of the machine. Of course, violating the Mac's

*(continues)*

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*Continued on page 4.*

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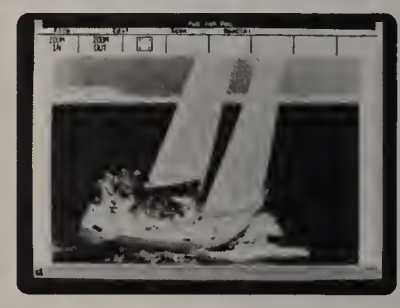

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*Pictured here is the "Minnow," piloted by racing newcomer James Stephens of Moss Beach, surging ahead to win the Half Moon Bay to Snug Harbor Regatta. (Photo by George Chadwick)*

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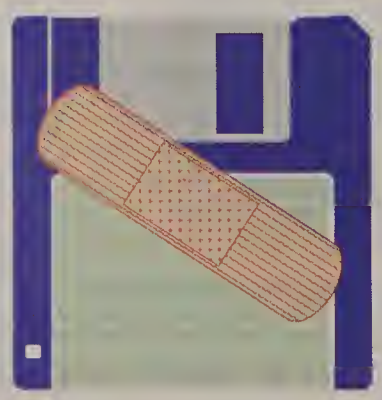

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innards was to many people a terrifying concept. GCC had to convince them that damnation would not be theirs if they bought HyperDrives. Since, for many, damnation was preferable to disk-swapping, GCC succeeded.

But the big movement came with memory boards. Apple originally charged $1000 to upgrade from 128K to 512K. (Even now, upgrading costs a pricey $449.) This price was so high that people figured taking a chance on a low-price, outlaw upgrade was worth the risk.

"When we started, the prevailing mentality was that an Apple dealer could open it up [for service or a motherboard switch], but no one else could," says Doug Gilbert, a vice president at Levco, a company built on the premise of the liberated Mac. In true hacker spirit, Gilbert and two friends had opened their Mac ("the first one sold in southern California") on the day they bought it, seeing where things hooked up, pulling chips out, and experimenting. They figured out how to add memory to the motherboard and decided to go into business.

Levco's booth at the January 1985 Macworld Expo offered upgrades, but at first no one dared take the step. Then, one brave officer of a user group took the plunge. His upgrade attempt was successful, the owner told his friends, and the dam burst. "We spent all night long doing upgrades in out hotel room," Greene recalls, and now Levco is a force in the market.

Still, opening the Mac was an act reserved for only the daring until about a year ago. "Two things happened to open things up," explains Steve Edelman, president of DataFrame, a company that includes memory upgrades and SCSI ports among its products. "First was the clip—a device that goes around the 68000 microprocessor and accesses it without soldering. A dealer can now easily attach something to the motherboard. Then came the Mac Plus. With it came a SCSI port, which invited new hardware products. And the Plus had something called SIMMs."

SIMMs work like slots; you simply plug in circuit boards that carry memory chips. Any company that has figured out how SIMMs work can make a product to boost the memory of a Mac Plus—a product that can be installed as easily as putting a plug into an electrical socket.

Of course, this requires unauthorized opening of the machine. But now, the previously unthinkable is fairly common. So,

*(continues)*

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As if that weren't enough good news, we are pleased to also announce one of this year's major advances in desktop publishing. Now, using TOPS PRINT™ you can have all your PCs share Apple's LaserWriter.™

TOPS and TOPS PRINT are available at Businessland and other fine computer dealers. For the dealer nearest you, call 800-222-TOPS (in California call 800-445-TOPS).

And we'll do just what a Macintosh and a PC can now do. Talk.

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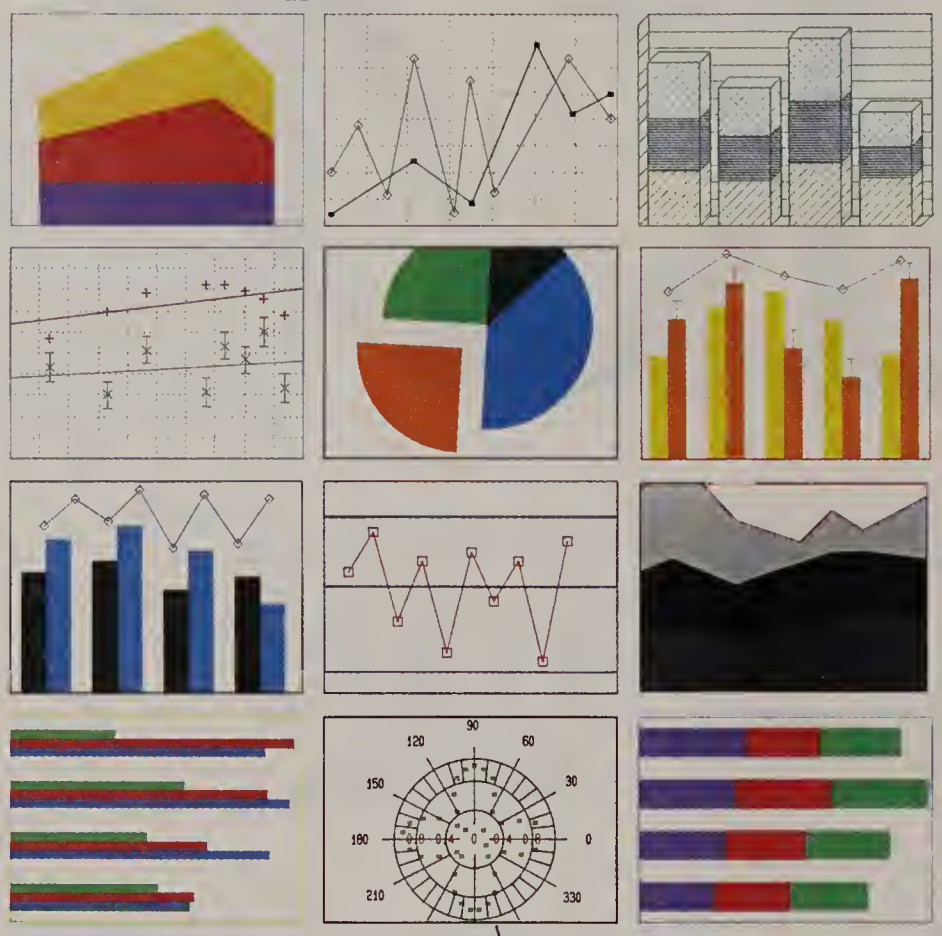
**Circle 524 on reader service card**

# If your Mac can't graph like this, it's not quite Cricket.



## Cricket Graph

• *Get the **12** most popular business/scientific charts and graphs in **one package** • Plot **2000** data points per series. (95% more than any other Mac graphic package) • Full color and **3-D** capability • Position up to **10 graphs** on a single page • Page layout for **desktop publishing** merges graphics with text*

Only one software package arms business and science with the tremendous graphic power of the Macintosh™. Cricket Graph. The first Mac package to deliver all the impact of color presentation charts and graphs. And all the possibilities of desktop publishing.

Transform data into graphics that speak louder than words. Then, print your creations out in crisp black and white or brilliant color on any of the most popular Mac-compatible printers, plotters and film recorders.

Cricket Graph. Nothing else even comes close. Just $195. Special versions available for film recorders and other high end output devices.

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like other laws recognized mainly in the breach, the authority of Apple's ban on hardware incursion has diminished. "The issue is respectability," says Steve Edelman. "Now opening the machine is not only respectable, it's considered good common sense."

### Do-It-Yourself Brain Surgery

Most often, the act itself is performed by a dealer or technician. But as more people become comfortable with the concept of opening the Mac, some companies are selling the idea that just plain users—even those fairly unsophisticated at computer tinkering—can do their own installations.

One such company is Human Touch, which includes an installation kit with its coprocessor boards. The kit consists of a long-handled hex wrench for unhooking the hard-to-reach screws under the Mac's hand grip and a 1½-inch putty knife (brand-named the Red Devil) for prying open the case after the five screws are removed. Then it's a matter of clipping, snapping, and screwing on a circuit board and a small fan.

"You don't need to be a technical wizard or electrician," says Gerry Grossman, an officer of Human Touch. "The most difficult thing to do is split open the security hole. And you don't have to worry about doing something you can't undo." Before releasing its products, Human Touch asked some nonwizards on its staff to try them out. "I'm not a technical person—I'm an English major," says Human Touch's Suze Di Pietro. "I installed a board without any instruction in 15 minutes."

Some people still come unhinged at the idea of just plain users cracking open the Mac. "I don't think users should be putting stuff in," says SuperMac's Steve Edelman (whose own products are strictly dealer-installed). "It's too easy to do damage. The only tools a user needs are a pen and a credit card."

### Apple Relents—A Bit

It has not escaped Apple's notice that thousands of Mac owners are voting with their credit cards—and in some cases, putty knives—to equip their machines with unauthorized hardware. For the record, company policy is unchanged. "Any product that makes a physical alteration to the Mac voids the warranty," says Ed Colby, the Apple product manager for the Macintosh CPU. "If you put in a screw, solder, cut,

*(continues)*

# DRAW PERFECTED

INTRODUCING

# CRICKET DRAW

Draw has been around as long as the Macintosh. It took Cricket Software to perfect it. Finally, the Mac's graphics capabilities can truly be realized with Cricket Draw, the revolutionary new draw program from Cricket Software.

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The kind of features you only dreamed possible, such as full rotation and tilting of any object, controlled shadowing, shading with a gray scale (0-100%), fountains (graded tints), starbursts, grates, bezier curves and much, much more. And with an Imagewriter II printer you can see it all in dazzling color.

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Special effects with text are Cricket Draw's forte. Place text on any arbitrary path; rotate, tilt, shadow, shade — YOU NAME IT!

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High quality graphics output on a laser printer requires knowledge of PostScript. Cricket Draw is actually a PostScript code generator. It does all the work. You never have to come in contact with PostScript, UNLESS you want to. Then you can access a PostScript window to edit or create your own code from scratch.

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Your current draw program is simply obsolete, why not advance to Cricket Draw, just $295, available at local dealers everywhere.

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# The Icon Review

# S H O W C A S E

## Works

From Microsoft Corp.

## $179

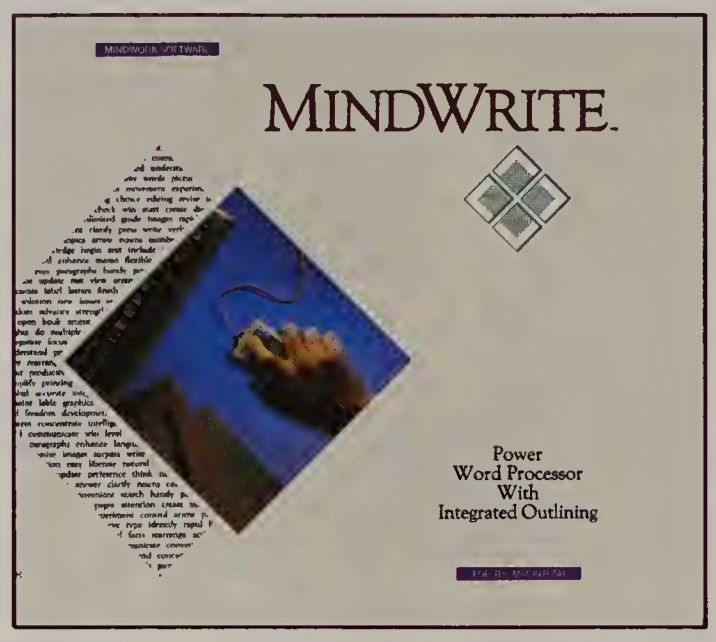
Works gives you a word processor, database, spreadsheet with graphics, and communications program in one easy-to-use package. All tools are fully integrated and can be used side by side on the screen in any combination at any time — simply cut and paste for fast, complete analysis.

Prepare letters, reports, and personalized mass mailings with a variety of fonts and styles, automatic mail merging, and a drawing tool for highlighting important information. Include charts, tables, and numbers from your spreadsheet right where you want them. Then *send* your document with a communications feature that allows background

sending and receiving of files!

Complete and easy to use, Works integrates the most-needed software functions into one single program. Buy Works and get it all!

*Requires 512K Enhanced or Mac Plus; modem needed to take advantage of communication capabilities*




## MindWrite $89

From MindWork Software

This powerful yet easy-to-use software offers outlining where you need it most — fully integrated within a powerful word processor. Other unique features include:

Multiple Windows — limited only by available memory • Auto-Numbering — watch MindWrite number and renumber document sections automatically • Drag Text — easier than cut and paste • Multiple Clipboard — accumulates ALL cuts and copies • Multiple Selection — to act on many elements simultaneously • File Conversion — reads MacWrite, ThinkTank, and Text Only files; writes MacWrite and Text Only files • Mark — track revisions easily with time and date stamping • Search — most extensive available • Word Count — counts characters, words, and paragraphs instantly.

Order MindWrite to add a dramatic new dimension to your Mac's word processing capabilities.

*Requires 512K or Mac Plus; supports ImageWriter & LaserWriter*

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## Cheetah 20 Quick Drive $699

Finally — a quality 20-meg hard disk that gives you the same reliable performance of more expensive drives for less! In fact, the Cheetah 20 Quick Drive contains the same quality components that Apple uses in their 20-meg SCSI drive. This means you are not sacrificing quality when you order this drive — all that's missing is a high markup.

The Cheetah's simple design keeps it running cool and quiet all day, while the 20 megabytes of space let you organize your files in one place. You get fast data access and easy setup with the SCSI interface, and the daisychain port allows you to connect up to seven SCSI devices to your Mac Plus. Order today and get the speed and capacity you need at a price you can afford!

*Requires Mac Plus; SCSI cable included*

Icon Review

## disk•books

From MicroStore

MicroStore has added a new Traveller series to their popular disk storage line. All disk•books and Travellers are made of durable nylon, fasten securely with velcro closures, and have no pocket trim to catch disk shutters.

| | |
|---|---|
| disk•book-10 | $14 |
| disk•book-32 | $22 |
| disk•book-Plus | $22 |
| Traveller-4 | $ 5 |
| Traveller-8 | $ 7 |
| Traveller-12 | $ 9 |

## MORE

From Living Videotext

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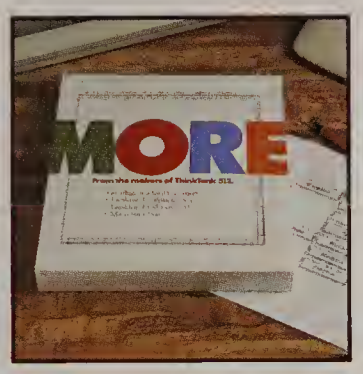
MORE is unprecedented in its ability to create great presentation graphics by automatically generating bullet or tree charts from outlines. Outlining tools and installable templates make managing ideas a snap, while multiple windows and easy export to Word, PageMaker, Excel, and MacWrite add significantly to MORE's flexibility. Charts can be printed on paper or as transparencies for instant overhead slides.

*Requires 512K or Mac Plus & external drive or hard disk*




## Fanny Mac

From Beck-Tech

## $79

Fanny Mac's reliable surge suppressor protects your Mac from damaging

powerline spikes, while its fan keeps your Mac cool inside. Fanny Mac fits into your Mac's handle, installing in seconds; and its unique "pass through" power assembly means you need only one power socket for both your Mac and Fanny Mac. Research proves that Fanny Mac protects your Mac's circuitry on two fronts — order today!

*Works w/any Mac*

## Accessories

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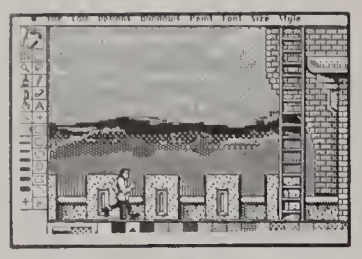


## SuperPaint

From Silicon Beach

# $55

SuperPaint combines the capabilities of MacPaint and MacDraw, *and* adds exciting new features. Use bit-map and object-oriented options in the same drawing, draft 8x10 documents, and enjoy automatic scrolling with pictures that exceed screen size. Choose three levels of magnification, rectangle and circle expansion, full-screen text editing, and 300 dots/inch bit-map graphics with LaserBits. Make great-looking graphics with SuperPaint!

*Requires 512K, Mac Plus, or Mac XL*

## Voila!

From Target Software

# $59

Voila! is a full-featured desk accessory outliner that can be accessed from any program! Turn any document created with your word processor into an outline, and edit, expand, or print outlines easily. Voila! gives you complete sorting and search capabilities, control over fonts and type styles, resizable windows, and 256 headline levels. You can even generate a table of contents and paste in pictures from graphics programs. Make the most of your outlines with Voila!

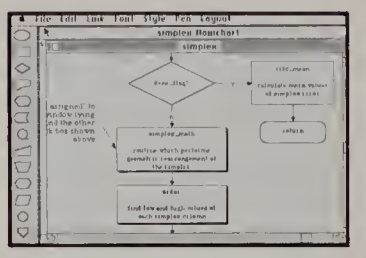
*Requires 512K or Mac Plus; supports LaserWriter*

## MacFlow

From Mainstay

# $79

Use your Macintosh as a tool to draw flowcharts, organization charts, and logic trees. Engineers, project leaders, anyone who needs to show order



will appreciate MacFlow, which is easier for charting than MacDraw. Change a box's size, and MacFlow fits your text into it; move or resize a box, and it maintains all the connections; use *hide* and *zoom* to simplify hierarchy or show detail. MacFlow makes it easy to visualize dynamic interrelationships.

*Requires 512K or Mac Plus; supports LaserWriter*

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Now's your chance to purchase a Bernoulli Box with an original retail value of $1,495 at a one-time low price! This 5-meg serial drive boasts the same unlimited storage and unrivaled security of the larger drives and works with a 512K or Mac Plus. It's 3 to 5 times faster than a floppy drive, gives you room to organize all your files in one place, and the printer port lets you use up to 1 meg of the disk as a printer buffer. Comes with a backup utility and sets up in minutes.

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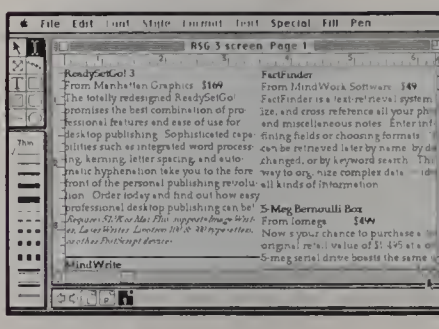

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- MacSpace $249

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## FactFinder

From MindWork Software

**$49**

FactFinder is a text-retrieval system that will store, organize, and cross-reference all your phone numbers, recipes, and miscellaneous notes. Enter information without defining fields or choosing formats. "FactSheets" you create can be retrieved later by name, by date created or last changed, or by keyword search. This program is an easy way to organize complex data — ideal for cross-referencing all kinds of information.

## ThunderScan

From Thunderware

Turn your ImageWriter into an art digitizer with ThunderScan, which features an optical scanning device that takes the place of the ImageWriter's ribbon cartridge. Powerful and easy to use, ThunderScan creates documents with very high resolution — 200 dots/in. This is easily the most economical and popular digitizer available!

*Works w/any ImageWriter; Mac Plus users need T'Scan Adapter Kit & printer cable (see line listings for T'Scan to IW II cable; cables for IW I and wide IW available from your Apple dealer)*

**ThunderScan $189**
**Adapter Kit $ 49**

## WriteNow for the Macintosh

From T/Maker Co.

**$109**

WriteNow combines power, speed, and ease of use in a word processor that can reformat and repaginate even large documents instantly. Other features include: multiple columns, unlimited footnotes, headers, and footers that can be seen and edited on screen; multiple windows; adjustable line spacing; soft hyphens; a background printing capability; and a built-in spelling checker. Send now for WriteNow!

*Works on any Mac*

## Mirror 40/40

From Mirror Tech

**$2595**

The Mirror 40/40 SCSI Drive gives you 40 megs of hard-disk storage and 40 megs of tape backup. Sheer size makes this drive perfect for sharing among several users — even when their applications are huge. And backups are so easy that you can depend on your data being there when you need it. MacServe networking software (a $250 value) is included free. You chose the Mac for its potential, choose a Mirror 40/40 to realize that potential.

*Requires Mac Plus; SCSI cable included*

## Hard Disk Partition/ Backup/Utility

From FWB Software

A hard-disk's speed is measured by the time it spends finding data on the disk. Hard Disk Partition accelerates performance because it limits the spread of file fragments as data is successively written to and erased from your hard disk. Hard Disk Backup is a speedy way to protect data by saving your files to floppy disks. Hard Disk Utility lets you load even copy-protected software to your hard disk.

*All are Mac Plus compatible*

**Partition $39**
**Backup $39**
**Utility $57**

**Target Software**
MacLightning $53
• Legal Dictionary $53
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• Thesaurus $29
Voila *Desk accessory outliner* $59

**Telos**
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ClickArt Letters/2 *NEW* $29
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Clickon Worksheet $46
WriteNow for the Mac $109
*Fast word processor*

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**Davidson & Assoc**
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**First Byte**
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**Great Wave**
KidsTime *SPECIAL* $29

**Infinity**
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**Microsoft**
Flight Simulator *SPECIAL* $32

**Mindscape**
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ComicWorks $49
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**Practical Computer Applications**
MacGolf *SPECIAL* $36
*Requires 512K or Mac Plus*

**QED Information Systems**
Typing Made Easy $36
*Improve your typing skills*

**Qware, Inc.**
OrbQuest $27

**Rubicon**
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Silver Palate Collection $29
*Requires Dinner at Eight*

**Silicon Beach**
Dark Castle $29
World Builder *NEW* $45
*Create your own games*

**Spectrum HoloByte**
Orbiter *SPECIAL* $27

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**CompuServe**
Starter Kit *SPECIAL* $25

**Data Viz**
MacLink Plus w/cable $159
*File transfer IBM to Mac; new version does more*

**Farralon**
PhoneNet for 128/512K *NEW* $39
*Connects Mac 128/512, LaserWriter, or AppleTalk devices*
PhoneNet for Mac Plus *NEW* $39
*Connects Mac Plus or ImageWriter to Network*
Phone Net/AppleTalk Adapter $36

**Hayes**
Smartmodem 1200 *SPECIAL* $399
Smartmodem 2400 *SPECIAL* $629
Smartmodem Bundle $449
SmartCom II *SPECIAL* $89

**Infosphere**
MacServe (per server) $250
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**Software Ventures**
MicroPhone *SPECIAL* $65
*Best communications software*

**Think Technologies**
InBox Personal Connection $65
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InBox Starter Kit $219
*Software & manuals for t server and 3 users*

**USRobotics**
Courier 1200 Modem $249
Courier 2400 Modem $499
Direct 1200 Modem *NEW* $119
*Hayes compatible—Super value!*

## Hardware

**Cuesta**
Datasaver—90 watt *SPECIAL* $279
Datasaver—200 watt $399
Datasaver—400 watt $529
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**Dayna**
MacCharlie Plus 256K Single Drive *NEW* $699
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*Runs IBM software on Mac*

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**Hayes**
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**Koala**
MacVision $175

**MacMemory, Inc.**
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*—Upgrade your Mac Plus memory to 2 meg. Plugs into standard SIMM sockets; includes MaxChill fan, MaxRAM/MaxPrint.* ***Requires installation by technician.***

**Radius**
Radius Full Page Display $1995
*Large screen monitor displays an 8-1/2" x 11" page at actual size.* ***Requires upgrade of Mac by manufacturer.***

**Summagraphics**
MacTablet—6"x9" $329
MacTablet—12"x12" $449
*Precision drawing and tracing*

**Thunderware**
ThunderScan $189
Mac Plus Adapter Kit $49
*Adapter & cable for Mac Plus; purchase printer cable separately*

## Disk Drives

**AST**
AST 2000 $2195
*20 Meg Winchester, 20 meg tape backup*
AST 4000 $4900
*74 Meg Winchester; 60 meg tape backup*

**Ehman Engineering**
800K External *SPECIAL* $229
20 Meg SCSI *NEW* $849

**Iomega**
Bernoulli Box for Mac Plus
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• 10+10 Dual SCSI Drive *SPECIAL* $1995
• 20 Meg SCSI Drive $1899
• 20+20 Dual SCSI Drive $2699
Cartridges
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• 20 Meg (3 Pack) *SPECIAL* $199
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Mirror 40/40 $2595

**PCPC**
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PL30 Meg SCSI $CALL
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MacBack 20 Plus Tape Back-up $CALL
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draw power, or alter the flow of air—that's a modification."

Yet Colby admits that Apple no longer regards these products with the stern wrath of the past. "There's been an evolution inside Apple," he says, tying this shift in attitude to "a greater appreciation for the desires of customers." Whereas before, he explains, Apple's attitude was, "No, you absolutely must not do this," now it's more like, "Well, if you want to do this, that's great, but you're on your own."

The first signal of Apple's change of heart was its grant of a warranty blessing to GCC's HyperDrive. At the time, no other mass storage device ran nearly as fast, and Apple needed to recommend the HyperDrive solution to its business customers. Then came the Mac Plus and its SIMMs. Apple's compromise was primarily a tacit admission that the closed-box approach wasn't working and that, whether Apple liked it or not, users were going to improve their Macs with internal modifications. So, Apple decided to like it. At least a little.

The corporate benediction almost went further than that. Last year Apple considered granting the outlaw hardware market an official blessing and ran some tests on certain products. The tests checked things like power consumption, heat, and vibration tolerance. The result, as it turned out, was not exactly what Levco, SuperMac, and the rest were waiting to hear. "The fact is that Macintosh in the current [1986] configuration does not lend itself to internal physical alteration," says Colby. "There may be an adverse impact on reliability with certain products."

Despite this, Apple isn't retreating to its earlier hard line. Colby even offers cautious praise for some of these products. For instance, he cites the Levco high-speed Prodigy upgrade as something that improves the Macintosh—and it couldn't be done without some internal modification. He also knows that products like Radius's full-page external monitor would not be workable without a warranty-voiding connection to the Mac's innards. He's happy that these devices exist to make the Mac more powerful.

Fortunately, as the outlaw hardware market grows, it becomes more established and experienced, and eventually loses some of the risky connotations that *outlaw* implies. Many companies making products that require internal modifications will supply their own warranties; many also are developing reputations for reliability. Some products use technologies that require no permanent alteration to the computer, and so if service or an official upgrade is required, the user can simply remove the offending part before presenting the Mac to an authorized dealer.

As Apple has come to recognize, the de facto opening of the "closed" Mac is a positive phenomenon. I would go farther and call it an inspiring phenomenon as well. The spirit of Macintosh has always paralleled the best of the computer dream: productivity and creativity accessible to all. So it is poetically justifiable as well as natural that the Mac community should use its ingenuity not only to get at the machine's innards but to learn to modify them to increase the power available to users. This whole episode is a testament to people's belief in the Macintosh. They liked the computer so much that they refused to accept that it had a closed architecture—and by pretending it was open, they made it so.

Can you imagine what that kind of enterprise will bring when we *really* get an open Mac? □

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Object Logo is a new programming language developed specifically for the Macintosh. Object Logo incorporates the symbolic processing power of LISP, full object-oriented programming capabilities and the most advanced math package ever put on a microcomputer in a proven, easy to learn educational programming environment. Object Logo — it's a rare blend of simplicity and sophistication.

The Object Logo programming environment features an editor with multiple windows, a debugger, and a hidden native-code compiler, so you get the advantages of both a compiler and an interpreter, rolled into one. Object Logo also improves on the graphics capabilities that made Logo famous with multiple graphics windows and multiple turtles, each implemented as customizable Object Logo objects, and with access to more than 100 Quickdraw commands. Sounds overwhelming? The Object Logo manual is written by experienced educators whose examples and comments will guide you every step of the way.

"High-level" programming with objects puts the full power of the Macintosh at your command. Yet with Object Logo, it's easy. Object Logo is already being used by the Apple Vivarium Project, by faculty and graduate students at MIT, and by prestigious Artificial Intelligence Labs such as Bolt Beranek and Newman, Inc. With Object Logo, you can still teach your students geometry, but you (and they) can also explore the most advanced concepts in computer science — like artificial intelligence and object-oriented programming — with ease!

Coral SOFTWARE

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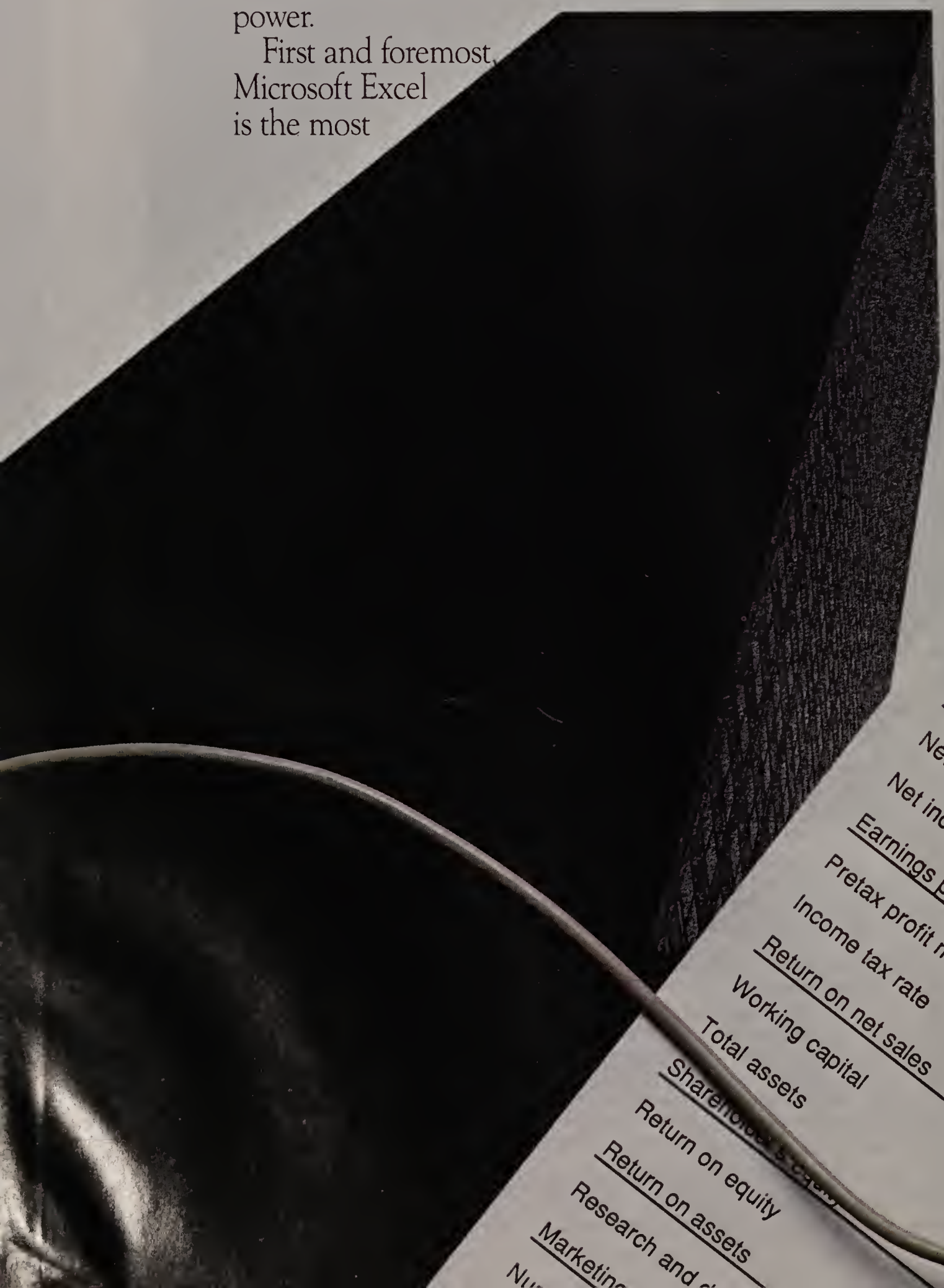

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the capacity to learn your most complex routines. And activate them with a single keystroke.

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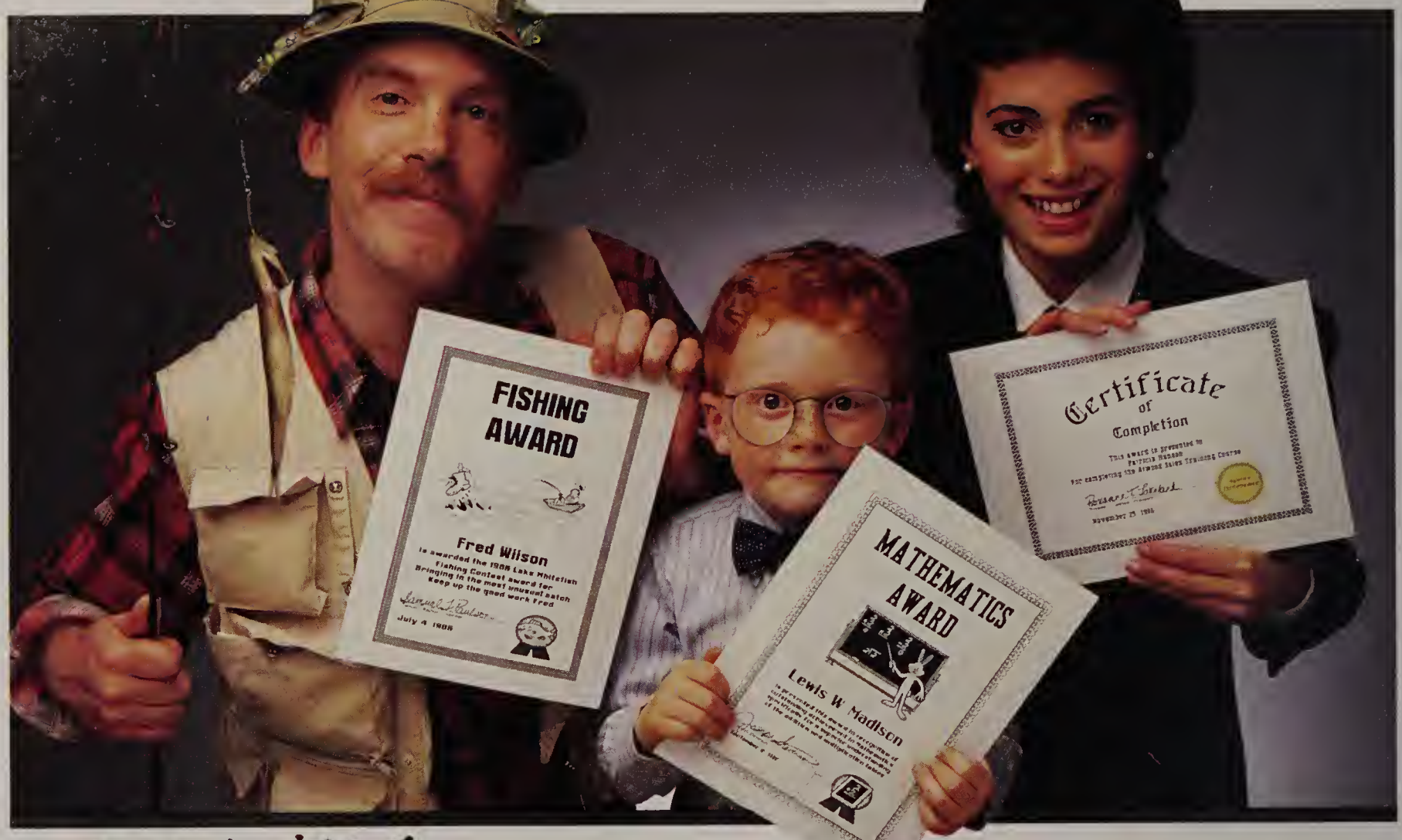


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# Macworld News

*by Daniel Farber*

## The Illustrators' Magic Wand

Apple's LaserWriter and Adobe's PostScript page-description language introduced the world to low-cost, graphic-arts-quality output. But PostScript's full drawing capabilities have remained hidden to most users. Existing drawing programs don't quite satisfy the needs of professional illustrators. For example, *MacPaint*'s bit-mapped images are too rough for many architectural and medical applications, and programs like *MacDraw* that provide the precision of structured objects don't take advantage of the power and flexibility built into PostScript.

With the introduction of its new product, *Adobe Illustrator,* Adobe makes many of PostScript's unique drawing routines available to non-PostScript programmers for creating illustrations on the Macintosh. Designed primarily for professional and technical illustrators, and for graphic designers requiring precision line art, *Adobe Illustrator* lets you draw with PostScript quality on screen.

The program has two modes: drawing and preview. In the drawing mode you start with a bit-mapped image. For example, you can scan in rough sketches, import *MacDraw* files, or draw freehand. The bit map is used as a background template to build the structured PostScript drawing. Using a pen tool with the mouse, you trace the outline of the bit-mapped image. The resultant tracing represents the structured PostScript image.

ED KASHI

***John Warnock, one of the creators of the PostScript language, shows off some of the flashy output created with Adobe Systems' new PostScript drawing program.***

The tool palette includes functions for fills, gray levels, line weight, squares, circles, end joints (miter, round, or square), and rotating, mirroring, and skewing parts of a drawing. In addition, the program offers eight zoom levels for precise adjustment. And you can specify color (PostScript supports color) for doing color separations on the Linotronic or on a color PostScript printer when it becomes available.

The program's text options are designed for annotating drawings, rather than publication layout. You enter text in a dialog box and specify leading, font, font size, type style, and kerning. You can rotate and scale text, but cannot wrap it around images.

The Preview mode bypasses QuickDraw, using a subset of the internal PostScript routines to show images on screen; there's a noticeable difference because PostScript's line-drawing routines are three times faster than QuickDraw's. A text editor lets you edit the PostScript file, so you can add special effects that *Illustrator* can't handle on screen.

*Illustrator* drawings are stored as PostScript text files rather than Macintosh resource files, so they're compact and transportable to any computer or printer that reads PostScript. This will make the planned IBM PC version of the product fully compatible with the Mac version. Adobe is also publishing the file format so that other applications can import and export *Illustrator* drawings. Eventually, Adobe expects more specialized applications such as ad makeup systems to evolve from *Illustrator.* For more information contact Adobe, Inc., 1870 Embarcadero Rd. #100, Palo Alto, CA 94303, 415/852-0271.

## Turnkey Desktop Publishing

Gestetner Corporation, a company having more than one hundred years of experience with mimeograph machines, has begun developing electronic publishing software and is also establishing itself as a systems integrator by installing and

*(continues)*

# Idea... Ideal.

Your Mac has big ideas. But its small screen can sometimes hold you back. Hook up *The Big Picture*™ and get a huge desktop that's ideal for just about any application: desktop publishing, spreadsheets, engineering drawings, architectural renderings, musical compositions. And the Macintosh software that you're working with today already knows how to use *The Big Picture's* larger display.

More than just a full page. *The Big Picture's* 17″ display actually gives you 4½ times more usable desktop than your regular Mac screen. See an entire page in Pagemaker,™ vertically or horizontally. Or with a slight reduction, see two entire pages—and still be able to read the text.

Big picture, small footprint. Your Mac snuggles up perfectly with *The Big Picture,* while providing easy access to the internal drive and programmer's switch. And the 17″ by 21″ footprint leaves you lots of workspace.

Easy Installation. Dealer installation is done in minutes with "clip on" connectors—no drilling or soldering. Your Mac stays portable too. Just disconnect *The Big Picture* to use the Mac's built-in screen.

The Ideal Display for your Mac. See your E-Machines dealer and get *The Big Picture.*

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***Turnkey Desktop Publishing (continued)***

supporting turnkey desktop publishing systems. The applications—including *PageMaker, MacDraw, FullPaint, Formation,* and *Laser Express* (a print spooler)—are linked via a proprietary transfer utility, which allows you to quit one application and open another without returning to the Finder. *Formation* is a $395 forms-creation program that provides a *MacDraw*-like environment and features precision alignment, repeating elements, rulers and grids, a variety of line options, and full font and type-style capabilities. For more information, contact Gestetner at Executive Boulevard, Yonkers, NY 10703, 800/431-2455 or 914/969-1216 in New York.

## DuPont Fiber Optic AppleTalk

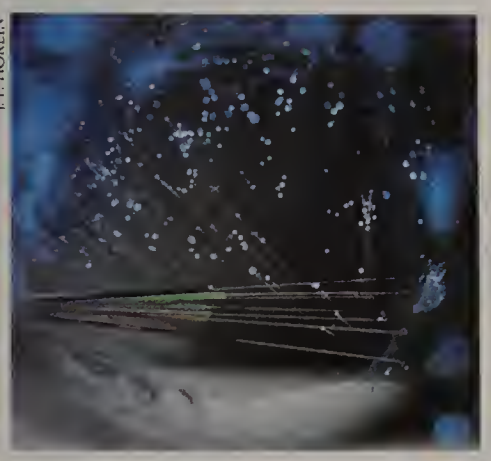
DuPont Connector Systems has designed a fiber optic network to replace standard AppleTalk cabling. This new product overcomes AppleTalk's 300-meter length limitation and will eventually allow users to send data 3 to 15 times faster.

DuPont's fiber optic connection box, like the standard AppleTalk box it replaces, connects to the Mac's printer or modem port. Two fiber optic lines link the Mac to the AppleTalk network. The fiber optic cable extends the maximum length between nodes to 1½ km, with no limit on total cable length. Although AppleTalk currently runs at 238.6K bits per second, DuPont is working on a version that transfers data at 600K bits per second using new Mac software and external clocking. Future versions of the product that connect to the SCSI port will allow AppleTalk to transfer data at 1½ to 3 megabits per second.

DuPont also has announced a fiber optic wiring concentrator to simplify AppleTalk office installations. One concentrator connects up to eight Macs in a star arrangement similar to AT&T's Starlan. Attaching two more concentrators expands the network further.

Fiber optic cable can be run from a concentrator mounted in a wiring closet to individual stations, where the cable terminates at a fiber optic wall plate. The network can be configured using a patch panel attached to the concentrator. Because the same cabling system works with both IBM and AppleTalk networks, multiple networks can coexist in the same building.—*David Ushijima*

I. P. HORLIN



***DuPont's fiber optic cabling extends the capabilities of AppleTalk.***

## Beyond Desktop Publishing

Alan Kay, one of the select brotherhood of Apple Fellows and seminal high-tech thinkers, has some interesting thoughts on desktop publishing—a term he objects to because it fails to describe accurately what he views as a revolution in the way people communicate. *Desktop,* Kay maintains, is reminiscent of people hunched over desks.

GEORGE STEINMETZ

***Alan Kay believes that networks and dynamic "viewing environments" will take us the next step beyond desktop publishing.***

"In Gutenberg's library, books were chained to the shelves. The idea of requiring someone to go to a library to read a book today is not much different. The destiny of media is to go with us." And *publishing,* Kay says, is equivalent to "freezing knowledge from its previously mobile form—a five-hundred-year-old embalming fluid for ideas."

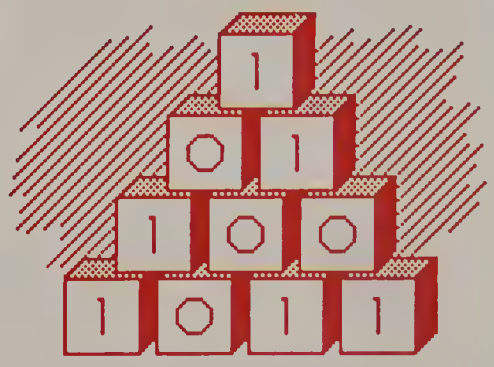
"A key question is, What does it mean to capture knowledge?" Kay observes. He believes that networking offers a dynamic way to capture information—to turn the burgeoning mass of data into knowledge.

In Kay's scenario for the future, much of the material we read will not be specifically addressed to us. While computers and networking provide a way to access a vast reservoir of information, he feels that electronic mail must evolve into a retrieval system capable of tapping all kinds of information sources.

To help eliminate the daily burden of logging on and exploring numerous on-line databases, Kay enlists the aid of *computer agents.* Such an agent can log on to information services and scan for material you want to read—based on a personal profile you provide to the computer—and monitor your electronic mail accordingly.

Kay also believes that the static model—capturing information on paper—will eventually be replaced by more dynamic models using real-time, 3-D animation.

But even if Kay's vision of electronic publishing—complete with color-animated environments—doesn't come to pass, it's likely that we are destined to spend more time reading dynamic electronic documents than static paper ones.



## Is It Art or Is It Memorex?

Quite a lot can happen when a woman criss-crosses the country asking our best computer programmers whether or not they are creating art as well as lines of weird code. The book that came out of this quest, *Pro-*

*(continues)*

# How To Make Your Maccing Faster, Easier, and a Lot More Fun!

Intelligent macros for the Macintosh.

**Tempo macros speed your work or play on the Macintosh.**

Record any series of Macintosh commands or keystrokes and Tempo will play them back, at top speed, every time you need them. With a single key code, you can execute a macro that replays an unlimited number of commands.

**Add intelligence to your Macintosh software**

If a macro needs to be performed 27 times in a row or every 15 minutes, Tempo will do that. If it depends on whether a number starts with a "$" or if a name is greater than "Jones," Tempo will read it and decide which way to branch. Tempo can even determine if it needs to *branch to another program.* Tempo will close the program you're in, open the other, and continue replaying your commands. Automatically. Exactly as you require.

**Edit your macros for changes or corrections**

You may edit Tempo macros the same way you create them – click to edit, click to change, click to save. Tempo has no complex programming language, simply step-by-step menu commands and dialog boxes.

**What you can do with Tempo**

- Reduce complex commands to a single keystroke.
- Automate moving information from one program to another.
- Have Tempo wait until the time you specify, then perform multiple tasks on your Macintosh – unattended.
- Guide new users through programs, prompting them with dialog boxes along the way.
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- Customize programs to work the way you need them to.
- Simplify, automate, customize, modify, design, and create in a million different ways!

**Other Tempo features...**

- Pause during a macro replay to enter text or make a selection.
- Record macros up to the limits of your disk space – hard drive or floppy.
- Assign up to 450 keyboard commands in each application.
- Use Command key codes or Option key codes.
- Replay in slow motion, in real time, or at high speed.
- Connect macros together, nested, branched or sequentially.
- Repeat the macro *if* or *until* it sees the specified text, or *for* a required number of times.
- Tempo works with nearly every Macintosh program.
- For the 512K or larger Macintosh and Macintosh XL.
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- If you're not absolutely happy with what Tempo can do for you and your Mac, return it within 90 days for a complete refund. We guarantee your satisfaction.

For $99, you get more macro power than a micro has ever had before.

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Circle 274 on reader service card

***Is It Art or Is It Memorex? (continued)***

*grammers at Work* (Susan Lammers, Microsoft Press, 1986) provides insights into a wider range of subjects than might be expected from a mass inquisition of this rather homogeneous fraternity. There are insights on things like the nature of creativity, the future of computing, the not-always-beneficial results of working for a suddenly successful company, the importance of music to the human soul, and how thousands of years of Japanese philosophy led to the creation of *Pac-Man*.

To anyone personally acquainted with the wizards who write our programs and design our computers, this erudition is not surprising. Scratch the surface of a great hacker, and you usually find a Renaissance man. Programmers face the complex task of constructing complete systems out of the basic building blocks of ones and zeros. Since their tools allow unlimited creativity, programmers learn the value of working with fresh, nontraditional approaches. Interview after interview here reveals a personality willing to try what others haven't tried, new solutions that eclipse what was previously considered the best possible.

Though generally reticent, hackers really open up when given a chance. Susan Lammers has allowed her subjects to shape the interviews as they like, and their personalities and obsessions pour off every page. It's a good selection, too. You might already be convinced that Andy Herzfeld and Bill Gates are interesting fellows, but the book also includes fascinating sessions with names known only in computer circles, like Charles Simonyi, Jonathan Sachs, Butler Lamston, and Jaron Lanier.

For budding programmers, this book is an invaluable tutorial on work habits (even including actual pieces of their programs, complete with comments and doodles), akin to the *Paris Review* series, "Writers at Work." For the rest of us, it's a good chance to meet the faces behind the interfaces.
*–Steven Levy*

## ImageWriter II Award

The "gutsy-looking . . . extremely expressive" ImageWriter II dot matrix printer received an award for product design in the consumer product division of the annual design review sponsored by *ID,* the industrial design magazine. The design, by Apple Computer and Frogdesign (Apple's design consultant), was cited for the functionality of its control panel and its efficiency in storing fanfold paper.

"The columns that support the raised rear end suggest an architectonic look distinct from an earlier vacuum-molded trend in product design," says Bill MacKenzie, Apple's in-house design manager for the printer. "The shapes specifically identify the functions they house."

FRED STIMSON

***Not just an ordinary printer–a gutsy-looking, expressive one.***

If this point of view needs further clarification, just compare the design of the ImageWriter I to the ImageWriter II.
*–Stuart Silverstone*

GEORGE STEINMETZ

***Graphic designer Aaron Marcus attributes the success of the Macintosh user interface (as evidenced by its numerous imitators) to its simplicity and consistent look and feel.***

## Aaron Marcus

The Macintosh user interface inherited the legacy of research at Xerox PARC and is now becoming the de facto standard for personal computers. Witness all the Mac-look-alike IBM PC and Apple II programs. Aaron Marcus, a graphic designer and authority on user interface design, maintains that the Mac and its predecessors represent an inevitable development in the evolution of user interfaces. Critical decision making about user interface design was taken out of the hands of computer programmers and given to graphic designers. Marcus believes that the Macintosh has given the user interface a widely recognized personality.

Basically, computers are graphic devices that should help us to communicate information as well as manage it, according to Marcus. "Typography, symbolism, color, layout, and sequencing constitute a visible language. As a visible language, the Mac user interface is an effective paradigm because it is simple, clear, and consistent; the characteristics of appearance and interaction are well defined."

Marcus's company, Aaron Marcus and Associates (Berkeley, California), has seven Macintoshes linked on a Corvus OmniNet with a 126-megabyte OmniDrive and the LaserWriter. He often receives requests to create Mac-like interfaces, and even uses the Mac to design interfaces for clients (as for Reuters's $100,000 Scitex graphic arts workstation and prototype screens, and users of Sun computers).

Although the Macintosh user interface has proven successful, Marcus believes the next generation of user interfaces must continue to redefine communication between humans and computers–especially as color, animation, and higher-resolution screens emerge.

# The inventors of the 3.5″ drive recommend only one floppy disk.

# Theirs.

If your computer has 3.5″ drives, it has a little bit of Sony. Because Sony invented the 3.5″ drive technology that has taken floppy disk memory all the way to two megabytes.

So nobody knows better than Sony how important high standards are for producing 3.5″ floppy disks. But then, Sony invented those, too, as well as the most demanding methods for making 3.5″ disks.

Such as the Sony Vivax™ magnetic medium, with the high coercive force necessary to suppress the "noise" that can cause disk error. And the Sony DDL™ binder system for incredibly even dispersion of magnetic particles on the disk surface. Then there's Sony's burnishing expertise that eliminates microscopic projections as small as 1/1,000,000th of a millimeter.

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SETH RESNICK

***David Levitt and his students at MIT's Media Laboratory have designed* HookUp!, *an iconic programming language that will be as "easy to use as driving an automobile."***

## HookUp!

Users have dreamed of programming with icons ever since the Mac was introduced. Imagine a Macintosh control panel that lets you reach in and reconnect all the input and output elements, including the screen—without typing or consulting a manual. At MIT's Media Laboratory, David Levitt and his students have built a prototype of an icon-based programming language that will let you do just that.

The program, *HookUp!,* has been used to compose music, to generate animation, and even to construct the "brains" of interactive animals in Alan Kay's experimental Vivarium project, in which children simulate living creatures with computers.

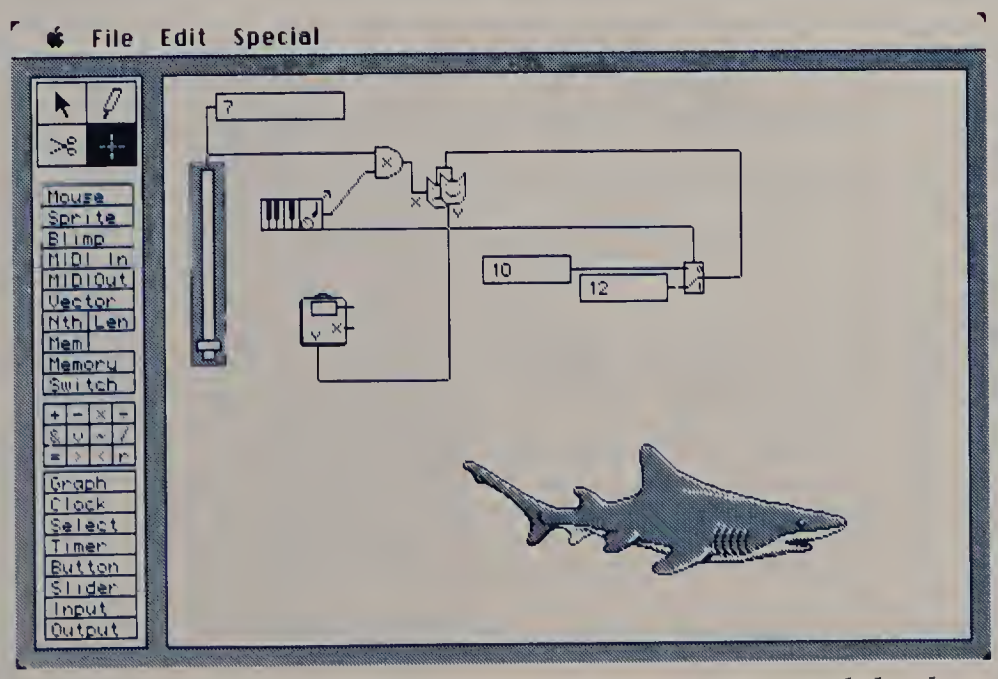
"*HookUp!* is a prototype of a software-writing environment that will be as easy to use as driving an automobile—[it will be] a software screwdriver or a universal joint for data," observes Levitt. He goes on to speculate that every Macintosh window will eventually have its own hidden control panel with which users can open the hood, see the circuitry, and customize the innards. They'll learn system programming without realizing it, he predicts.

Programs like *Helix, Filevision, Pinball Construction Set, ResEdit,* and *Servant* fall short of providing the full power of a programming language. None of them attempt to support real-time programming, not to mention music and animation—all key elements of *HookUp!,* which allows users to manipulate both static data and processes.

The cursor can be changed to a wiring tool for connecting *HookUp!*'s intuitive icons or a wire cutter for severing connections. Debugging is as easy as dragging around output boxes and connecting them.

Burt Sloane (of "Bug" and "MazeWars" fame) wrote the first version of the language, but MIT's Entertainment Group and Apple's Vivarium team are still working on it. Future versions must be accessible to Vivarium's second-graders, who may leave some "hoods" closed for a few years. MacroMind has joined the project, providing real-time animation and various sound capabilities; ultimately, you may be able to add customized features to programs like *VideoWorks* and *MusicWorks.*

Because *HookUp!* is optimized for real-time interaction with data, it is a simple matter to construct a voice-recognition system that responds to a variety of melodies vocalized by the user. Depending on what melody is intoned, *HookUp!* improvises a musical accompaniment in the style of Art Tatum, or turns on the kitchen lights and makes coffee, or responds in any other manner the user desires.—*Christopher Yavelow*




***The circuit shown here lets the user control an animated shark with the mouse and a MIDI device. The result is a shark singing along with whatever is being played at the MIDI keyboard—real-time control of animation via MIDI data.***

## In the Chips

Last summer's United States-Japan Semiconductor Trade Agreement requires that Japanese chip makers sell chips for a fair market value established by the Commerce Department. This benefits United States semiconductor companies—but at the expense of hardware manufacturers who are now paying almost double for 1-megabit and 256K RAM chips. Prices for Macintosh memory upgrades have skyrocketed: 1-megabit chips jumped from $30 last spring to around $60 in the fall; 256K chips hovered around $5, up from around $2.25.

The Prodigy is a $7000 68020-based Macintosh with four megabytes of memory and 32 one-megabit RAM chips on its digital board. Its maker, Levco, had planned to reduce prices, but the FTC changes prevented it from doing so.

MacMemory, one of the most successful companies in the upgrade business, doesn't expect a severe impact for the present because of long-term contracts it signed before the trade agreement. But it's unlikely to offer lower prices in the near future. MacMemory has postponed introducing a 2-megabyte upgrade with 1-megabit chips until chip prices stabilize.

Dove Computer produces a 4-megabyte memory upgrade board priced at $2799—more than the Mac Plus itself. Originally, the company had hoped to sell the board for $1999.

# THE ONLY COMPLETE MULTIUSER SYSTEM FOR APPLETALK AND ANY HARD DISK

### MultiUser Helix

MultiUser Helix is a shared data-based information management and decision support system that includes a complete application building environment. With MultiUser Helix you can design a system to run a business, office, or department and then share that system to coordinate the efforts of your people.

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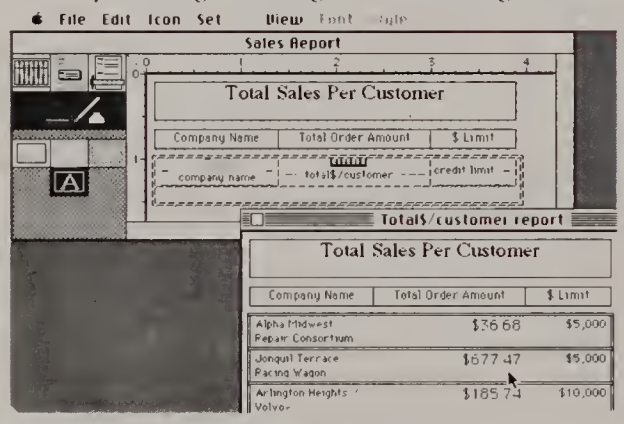
Use icons and visual design tools to create all the vital input and report forms, lists, analyses, and mail merge letters needed to run your business. No need to learn a programming language, understand arcane command codes or special formulae. Visual building blocks let you quickly set up data-based calculations to take care of any business need; from order entry, inventory control and invoicing to sales analyses, budget tracking and asset management.



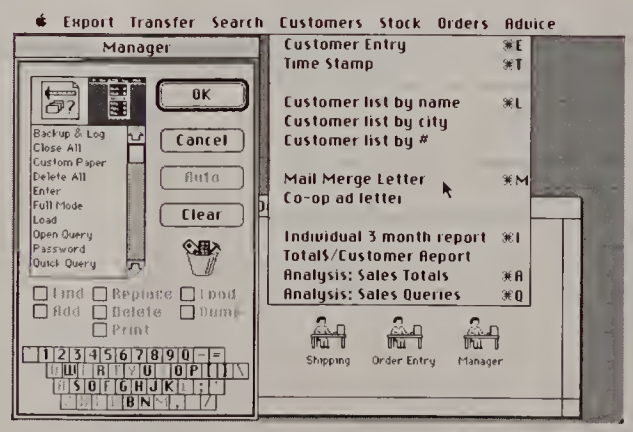

*Design forms that reflect the way your business works — from mailing labels to entry forms to presentation-quality reports. All Macintosh fonts, styles and graphics capabilities are supported.*

### Everything built in

In MultiUser Helix, the multiuser capability — enabling more than one person to work with the same information base at the same time — is built into the software. All other systems require special hardware or extra software. They "force" a multiuser effect with programming tricks like "semaphores," and rely on external "fileservers" to simulate multiple access to files. This results in a complicated, inflexible, slower, and more expensive system. In MultiUser Helix, the whole network functions like a human nervous system, with its own updating and feedback mechanisms as a natural part of the system. There is no reliance on external hardware devices, and no need to worry about programming interlocks and special volume configurations.

### A system everyone can share

Just connect your Macintosh computers with the AppleTalk network (the same cables that connect the Macintosh with the LaserWriter). MultiUser Helix automatically updates all screens and shows the current results of any changes made on the network. MultiUser Helix handles all network control, including record updating and record locking. Since everything is already built in, there is no need to worry about special fileserver hardware or software. Best of all, MultiUser Helix works with any hard disk.




*Simply type your own menu names into the Macintosh menu bar and drag form names and commands into the menus. Then click user options and permissions on a per form basis before assigning keyboard controls which instantly open forms for entry, automatic reports and printing.*

### Expandable

This package contains 3 MultiUser Host/Guest disks, so that you can start with a 3 station network. Additional stations are available to a total of 31 per network.

### Full support from Odesta

This MultiUser Helix package includes: 7 disks (2 Double Helix v.1+ program disks, System disk, Resource/Work disk with sample applications, 3 MultiUser Helix Host/Guest disks); 3 reference manuals, including a tutorial Quick Start guide, and an 18 ring project binder with notepad. To Odesta, your business is as important as our own: call us toll-free with technical questions or to inquire about our Consulting and Application Design Services.

### Key Network Features

- Supports AppleTalk Network
- Compatible with any hard disk **(no fileserver required)**
- Expands up to 30 users per network
- Each user can have his or her own personalized menus and password that relates to that person's function
- Time stamping
- Automatic external data log file to ensure data integrity
- Automatic updating of any record or list — on screen
- Complete control of viewing, adding, deleting, changing, or printing information on a per form/per user basis
- Capability of having multiple "hosts" on one network simultaneously
- Can be used in conjunction with volume servers and file servers
- MultiUser Helix receives the same excellent support Odesta gives to the other members of the Helix family

### Requirements

- Network host requires hard disk, and 1Mb memory is recommended.
- AppleTalk Network.
- Guest nodes work with the Macintosh Plus, 512E, or Macintosh 512 with external drive.

Odesta Corporation 4084 Commercial Avenue Northbrook, IL 60062 U.S.A.
800-323-5423 (In IL) 312-498-5615

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MACWORLD EXPOSITION

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# Armchair Quarterbacks

Avalon Hill Game Company has introduced *Mac Pro Football,* the result of ten years of research and four years of development to figure out over one billion theoretical play combinations. The program lets you coach the great Super Bowl teams of yesteryear by selecting offensive and defensive strategies for your team based on actual game situations.

The heart of the game is the statistical information provided for each team, incorporating more than 140 categories, including individual and team stats for rushing, passing, tackles, and punt returns.

You can play against the computer or with another player at one of three levels: championship, play-off, or contender. The referee calls penalties and tells you the results of each play. You can even dictate the playing conditions for games (for example, the 1984 Forty-Niners versus the 1967 Packers at Green Bay, temperature 17 below zero, wind 6 mph, 5:38 left in the fourth quarter, Packers trailing 17-14 with the ball on their own 38-yard line). The program keeps track of all statistics and provides a final game printout.

A League Play version allows you to fill out a game plan sheet with over one hundred statistical categories, instead of playing directly with the computer. You feed the data to the Mac and it plays the game in about 10 minutes. As the season progresses, the program keeps track of team and league statistics.

M. DI GIACOMO

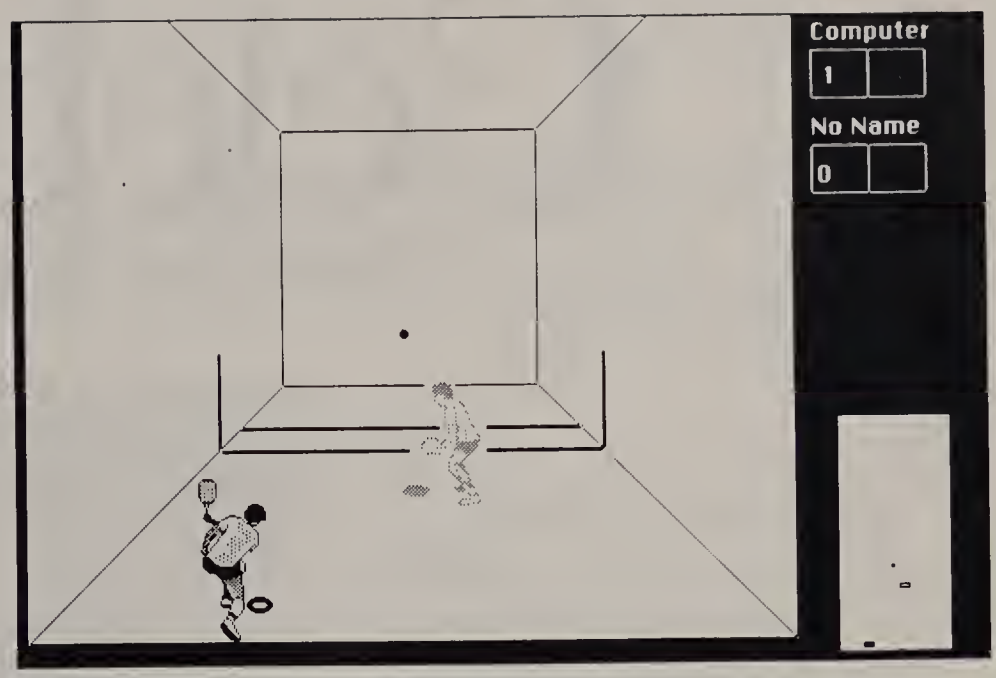
**Mac Pro Football** ***doesn't let you play linebacker for the Bears, but you get to coach the great Super Bowl teams of the past.***

# Smash Hit Racquetball

Primera Software's *Smash Hit Racquetball* provides 273 frames of animation with movements and digitized sounds that are more realistic and flexible than those of many game simulations available for the Macintosh. For instance, the ball and players grow larger as they move toward the back of the court, and smaller as they approach the front wall. There are also keyboard controls for ball placement and finesse shots, slow-motion replays, and four levels of play.

*Smash Hit Racquetball* costs a good deal less than competing game software, and this is reflected in its austere manual and packaging. Primera expects to generate a fair amount of impulse buying with the extremely low per-unit price of only $14.95 (including an unconditional ten-day money-back guarantee).

*Smash Hit Racquetball* is not only a bargain but a very good simulation as well. Hopefully, other game developers will consider adopting such an impulse-buy concept. For more information, contact Primera Software at 800/643-0800 or 415/525-3000.




***Flexible player movements, digitized sounds, and a good sense of perspective help give*** **Smash Hit Racquetball** ***a realistic feel. You'll even work up a sweat.***

# The Birth of Mac Medical Software

According to David Robinson, president of Dapple-Tech Computers and publisher of *MedQuest,* only 4 percent of the estimated 700,000 doctors in the United States use computers to manage their practices. Robinson claims that 340,000 respondents to a 1984 survey of medical practitioners said they would probably automate their offices in the next two years. Competition from health maintenance organizations and independent provider associations is forcing doctors to consider microcomputer technology as a low-cost way to increase profitability, productivity, and ability to compete.

Some software developers have seized this opportunity and have introduced a variety of Macintosh-based medical office management programs during the past several months. Complete multiuser systems typically provide patient-record management, billing, office administration, and insurance handling capabilities. They range in price from about $4000 to $10,000, an attractive alternative to minicomputer-based solutions with an average system price, according to Robinson, of over $20,000.

The most recent issue of the *Omnis 3 Plus Business Directory* lists 24 products in the medical and medical office management categories. *MacGuide,* a list of Macintosh programs from the *International Software Database,* lists an additional four products.

Most of the developers in-

*(continues)*

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At MacConnection, we bend over backwards to offer you Macintosh add-ons and software at low prices. With service and support that's guaranteed to keep all your ducks in a row. Because, when it comes to the Macintosh, we know which end is up. Here are just a few of the products that keep our customers smiling.

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FileMaker Plus $159

**Collect your thoughts.**
The **Acta** outline processor from Symmetry will capture and organize your latest flashes of genius—even when you're in the midst of another application. Outlines can be cut and pasted into other programs, and powerful search and sort features help track down lost thoughts.

Acta $39

**Bottom Lines.**
**Rags to Riches Ledger** is the foundation of Chang Lab's highly acclaimed line of accounting software (which also includes **Payables** and **Receivables**). The brand new version features macros for importing data, clairvoyant search fields, and a wide range of printing styles and fonts.

Rags to Riches Ledger $125

# MacConnection™

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***Birth of Mac Medical Software (continued)***

volved believe that the medical-management marketplace is about to explode; small medical offices have resisted the previous generation of systems because of their high price. Many products were developed by doctor-programmers or with the help of medical advisers, and they all maintain that after-sale support is essential.

The Macintosh has an important edge over its competition.

"Since medical personnel rather than physicians are the primary users of the systems, minimizing training costs is a critical factor," says Ken Kingsbury of HealthCare Communications, developer of *MediMac, DentalMac, OptiMac,* and *ChiroMac.* Overall, the prognosis looks excellent for the Mac in medicine. For more information, contact DappleTech Computers *(MedQuest),* P.O. Box 220, Laurel, MD 20810, 301/792-2735; Blyth Software Inc. *(Omnis 3 Plus Business Directory),* 2929 Campus Dr. #425, San Mateo, CA 94403, 415/571-0222; *MacGuide,* 1520 S. College Ave., Fort Collins, CO 80521, 800/MAC-MENU; or Healthcare Communications *(MediMac),* 245 S. 84th #301, Lincoln, NE 68510, 800/422-6227.—*Steve Mann*

# The Chinese Macintosh

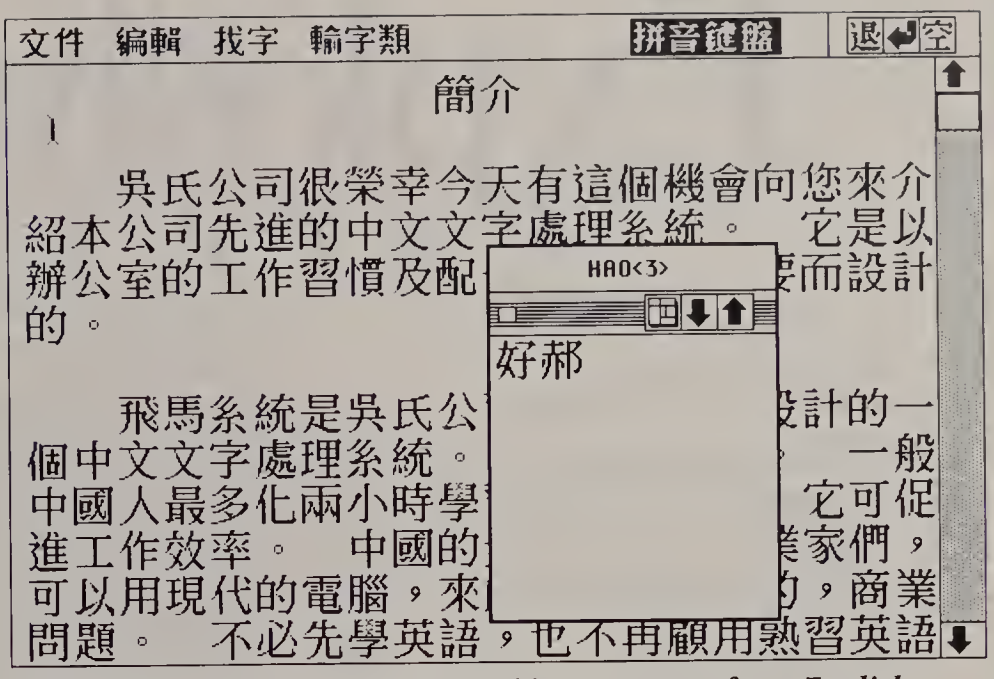
Unisource Software Corp. has introduced *FeiMa,* the first Chinese word processor for the Mac. It takes advantage of the Macintosh user interface and graphics to emulate a Chinese word processor and offer several other input methods.

According to *FeiMa* creator Gene Wu, computers have flourished in English-language societies because our alphabet comprises a closed set of characters. Until now, adaptations of English word processing techniques to Chinese have primarily relied on an English-language keyboard for input. But because the Chinese language is word oriented, with a potentially infinite set of characters, these attempts have been unsuccessful.

Instead of relying on a keyboard, *FeiMa* uses the mouse to simulate the Chinese pen. You can select characters from a simulated Chinese typewriter, access a dictionary of predrawn characters, specify the number of strokes in a character, and create characters and save them in the dictionary. Two keyboard methods are available: one, pioneered by IBM, maps radicals to the English-language keyboard; and the other, a phonetic method, lets you type in the sound or tone of characters in English and select from list characters. You can also combine English with Chinese in documents.

*FeiMa* comes with a 2450-character dictionary and prints on the ImageWriter, Toshiba 1350, and Epson FX-80. Because some of the program's internal structures deviate from the Macintosh user interface, you cannot print on the LaserWriter or import graphics and data from other applications.

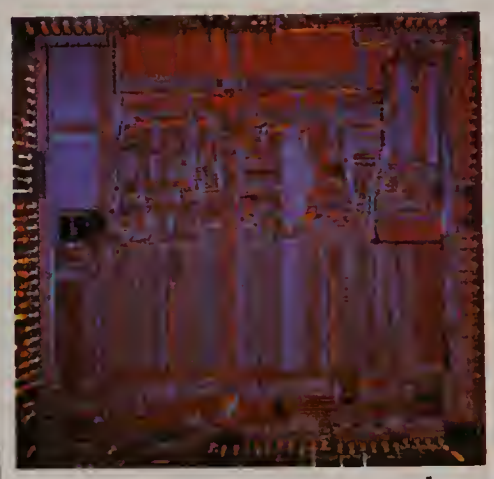
*FeiMa* is available in two versions: *FeiMa-II,* the complete system ($545), and *FeiMa-S,* an abbreviated version ($195). An additional 3080-character set is also available, as well as a translator that converts classic Chinese characters into the simplified form commonly used in the People's Republic of China. For more information contact Unisource, 23 East St., Cambridge, MA 02141, 800/343-5504.




**FeiMa's *phonetic keyboard method lets you transform English sounds into Chinese characters.***

# Motorola's 68030 and Beyond

Motorola, spurred by Intel's introduction of its 32-bit processor, the 80386, has released details about its 68030 processor. According to early reports, this next-generation processor will perform two to four times faster than Motorola's 68020, although it won't be available in quantity for another year.



***The heart of the new Mac—the Motorola 68020 chip.***

The 68020—currently used in workstations like Sun Microsystems' Sun/3 line and rumored to be the heart of Apple's new Macintosh line—is at least twice as fast as the Mac's current processor. The 68030 will likely provide a logical upgrade path for the Mac's system designers because it can conceivably run existing Mac programs up to eight times faster than the Mac Plus's current processor.

Like the 68020, the 68030 contains a memory manager on the chip that can manage 4 gigabytes of memory. Motorola also plans to offer a faster floating-point coprocessor, the 68882, that executes math operations two to four times faster than its predecessor, the 68881.

Motorola is also reportedly developing an even faster processor, the 78000, scheduled for release in 1987. Based on RISC (reduced instruction set computer) technology, it is capable of performing 20 million instructions per second, over 20 times more than the 8MHz 68000 used in the Mac Plus.
—*David Ushijima* □

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*Includes GL, AR, AP, Payroll, & Invoicing.*
**Dow Jones**
Straight Talk *(access News/Retrieval)* . . . . . 62.
Spreadsheet Link . . . . . 65.
Market Manager PLUS . . . . . 129.
**Dreams of the Phoenix**
Day Keeper Calendar . . . . . 27.
Phoenix 3D *(3D graphics)* . . . . . 27.
Quick & Dirty Utilities Vol. 1 or Vol. 2 . . . . . $27.
Twelve-C Financial Desk Accessory . . . . . 27.
**Dubl-Click Software**
World-Class Fonts! Vol. One or Vol. Two . . . . 29.
Calculator Construction Set. . . . . 39.
**EDO Communications**
Laserworks *(requires 512k, Laserwriter)* . . . 229.
**Electronic Arts**
Financial Cookbook *(financial formulas)* . . . . 32.
Deluxe Music Construction Set . . . . . 32.
**Enabling Technologies**
Easy3D *(create solid 3D objects)* . . . . . 79.
**Enterset**
Quickpaint *(find Paint files fast)* . . . . . 27.
Quickset *(icon-driven desk accessories)* . . . 27.
Quickword *(word processing tool)* . . . . . 32.
MacGAS *(spell checker, 512k, ext. drive)* . . . 55.
**1st Byte**
First Shapes *(preschool learning tool)* . . . . . 32.
Speller Bee, KidTalk, or Mathtalk . . . . . 42.
Smoothtalker *(speech synthesis)* . . . . . 52.
**Forethought**
Factfinder *(free-form info organizer)* . . . . . 79.
FileMaker *(custom forms & reports)* . . . . . 99.
FileMaker Plus *(feature-packed database)* . 159.
**Fortnum/Southern**
MacInooga Choo-Choo *(train set, 512k)* . . . . 21.
MacChemistry . . . . . 89.
**FWB Software**
Hard Disk Backup *(protect hard disk info)* . . 39.
Hard Disk Partition *(speeds up hard disk)* . . 39.
Hard Disk Util *(program backup)* . . . . . 59.
**Great Wave Software**
Christmas Favorites . . . . . 12.
Instrumental Favorites . . . . . 12.
The Art of Fugue *(Bach)* . . . . . 12.
KidsTime *(educational, ages 3-8)* . . . . . 29.
LOC *(strategy game)* . . . . . 29.
ConcertWare+ *(music composition)* . . . . . 29.
ConcertWare+ MIDI . . . . . 75.
**Greene, Johnson**
Spellswell *(60,000 word dictionary)* . . . . . 45.
**Hayden Software**
I Know It's Here Somewhere *(filer)* . . . . . 20.
Hayden:Speller *(for Word & MacWrite)* . . . . . 27.
MusicWorks *(songs for your Mac)* . . . . . 32.
DaVinci Building Blocks *(req. Paint program)* 46.
Home Design *(home planning tool)* . . . . . 49.
Score Improvement System for the SAT . . . . 59.
VideoWorks & MusicWorks Bundle . . . . . 59.
DaVinci Commercial Interiors. . . . . 114.
**Ideaform**
MacLabeler *(print disk labels)* . . . . . 29.
**Imagine**
Smart Alarms *(DA reminder system)* . . . . . 39.
**Industrial Computations**
Powermath *(equation solving tool)* . . . . . 52.
**Infosphere**
LaserServe *(network software)* . . . . . 125.
MacServe *(network software)* . . . . . 250.
**Innovative Data Design**
Paste-Ease *(requires Paint program)* . . . . . 35.
MacDraft *(new updated version, 512k)* . . . . 179.
**Kensington**
Graphic Accents *(req. Paint program)* . . . . . 29.
Type Fonts for Text *(16 new fonts)* . . . . . 29.
Type Fonts for Headlines *(req. 512k)* . . . . . 42.
**Layered**
Notes...For Excel or Jazz . . . . . 42.
Front Desk . . . . . 75.
**Legisoft/Nolo Press**
WillWriter 2.0 *(prepare your own will)* . . . . . $32.
**Linguist's Software**
Tech *(1000 different symbols)* . . . . . 59.
*FOREIGN LANGUAGE FONTS*
MacCyrillic. . . . . 39.
SuperFrench/German/Spanish . . . . . 39.
MacHieroglyphics, MacKana/Basic Kanji, MacSemitic/Coptic/Devanagari, MacKorean, MacArabic, MacGreek, MacHebrew *each* 59.
SuperGreek New Testament . . . . . 79.
LaserFrench/Greek/German/Spanish . . . . 79.
MacGreek/Hebrew/Phonetics . . . . . 89.
**Living Videotext**
ThinkTank 512k *(outline processor)* . . . . . 99.
More *(outlines, windows, & tree charts)* . . 159.
**MacMemory**
MaxRam & MaxPrint . . . . . 39.
**MacroMind**
M.U.D. *(Art Grabber+, CheapPaint)* . . . . . 32.
**Magnum**
Natural Sound Effects . . . . . 27.
Natural Sound Cable & Editor Disk . . . . . 89.
McPic - Volume 1 or Volume 2 . . . . . 29.
The Slide Show Magician 1.3. . . . . 35.
**Manhattan Graphics**
Desk Design *(2 volume set)* . . . . . 37.
Ready,Set,Go!3 . . . . . 175.
**Microsoft**
Flight Simulator *(the Mac takes flight)* . . . . . 33.
Learning Multiplan and Chart *(2 disks)* . . . . 39.
Chart 1.0 *(42 chart styles)* . . . . . 72.
Basic 2.1 *(Basic language interpreter)* . . . . 89.
Multiplan 1.1 *(63 columns by 255 rows)* . . 105.
File 1.04 *(flexible data manager)* . . . . . 111.
Word 1.05 *(word processor, mail merge)* . . 111.
Fortran 2.2 *(compiler)* . . . . . 169.
Works 1.0 *(integrated productivity tool)* . . 189.
Excel 1.0 *(power spreadsheet)* . . . . . 225.
**Miles Computing**
Mac the Ripper *(req. Paint program)* . . . . . 27.
**Mindscape**
The Luscher Profile *(personality profile)* . . . 24.
The Perfect Score: SAT. . . . . 47.
ComicWorks *(create your own comics)* . . . . 49.
GraphicWorks *(newsletters, ads, posters)* . 49.
**Monogram**
Forecast *(tax planning)* . . . . . 41.
Dollars & Sense *(home, small business)* . . . 81.
**Nevins Microsystems**
Turbocharger *(disk cache, req. 512k)* . . . . . 39.
**New Canaan MicroCode**
MDCFinder *(requires 512k)* . . . . . 20.
Mac Disk Catalog II *(requires 512k)* . . . . . 32.
**Odesta**
Helix *(req. 512k, external drive)* . . . . . 105.
Double Helix *(relational, custom menus)* . 289.
**Palantir**
MacType, MathFlash or WordPlay . . . . . 26.
Inventory Control, GL, or AR . . . . . *each* 69.
inTalk *(communication to emulation)* . . . . . 79.
**PBI Software**
Icon Switcher *(customized icons)* . . . . . 14.
Icon Fun & Games or Business Libraries . . 14.
HFS Locater *(DA organizer for HFS)* . . . . . 27.
Hard Disk Backup *(supports MFS, HFS)* . . 29.
**Peachtree**
Back to Basics GL, AP, or AR . . . . . *each* 89.
**Polarware**
Graphics Magician *(animation)* . . . . . 39.

# In Case of Emergency

**Big Mac attack. Real big.**
Robert Smith (his real name) is a rationalist. He designs rational tools and systems for surviving a nuclear attack.

Throw away your notions of crazy geeks armed to the teeth in desert outposts. Our winner has thought this thing out. He's even written a book on the subject: "How to Survive a Nuclear Disaster."

**Gimme Shelter.**
Mr. Smith opposes using the big one as much as the next sane human being. But, he dares to think the unthinkable: that your chances for survival are better if you have a very well equipped shelter from the storm. So he developed the concept of group-owned CAYASA's, or "Come-As-You-Are Survival Areas." He'll buy the land, pre-dig emergency shelters, purchase tools and supplies, publish a newsletter, get an 800 number, and give training sessions to members, all for a rather low monthly fee.

**Where has all the software gone?**
The Mac is a real lifesaver when it comes to setting up this operation. Smith is using MacProject for strategic planning, and Microsoft Word, MacWrite, and MacLightning for his extensive word processing. MacPaint, MacDraw, and FullPaint help with the design and layout of fallout shelters and tools. And OverVue and Helix help him create killer databases of the numerous military facilities that comprise our nuclear infrastructure (i.e. not good locations for CAYASA's).

To tell you the truth, we're a little overwhelmed at how many Mac programs Mr. Smith uses. But, after all, there may not be much time.

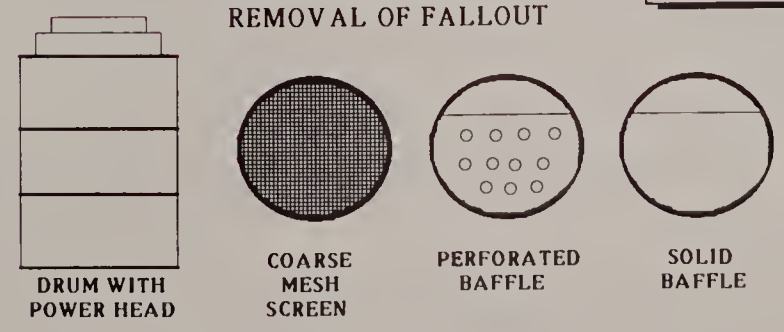
There is, however, we hope, enough time for you to enter our contest. Are you doing something fascinating with your Mac? Let us know.

**Contest Winner #2**

**Name:** Robert C. Smith, C.E.O. Arminius Publications & Productions, Merchantville, NJ

**System:** Mac Plus, Mac 128, and unenhanced Mac 512.

**Application:** Develops strategies for surviving nuclear war.




**Mr. Smith's innocent looking vacuum could be a real lifesaver when the long hard rain starts to fall.**

*"My Connection."*

# MacConnection™

14 MILL STREET, MARLOW, NH 03456 1-800/Mac&Lisa or 603/446-7711

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# Dynamite service!

**ProVUE Development**
OverVUE 2.0 *(power-packed database)* $149.
Mail Manager Template . . . . . 29.
Personal Finance Template . . . . . 29.
**QED Information Sciences**
Typing Made Easy *(instruction)* . . . . . 35.
**Rubicon Publishing**
Silver Palate Collection *(NY's finest!)*. . . . . 29.
Dinner At Eight *(recipes to wines)* . . . . . 35.
Dinner At Eight-Silver Palate Bundle . . . . . 59.
**Satori**
BulkMailer *(mailing lists)* . . . . . 75.
**Sierra On-Line**
MacOneWrite CD, AR, or GL. . . . . *each* 79.
**Silicon Beach Software**
Accessory Pak 1 *(useful utilities)*. . . . . 21.
Silicon Press *(printer utility, 512k)* . . . . . 42.
**Simon & Schuster**
Mac Art Department *(req. Paint program)* 24.
Paper Airplane Construction Kit. . . . . 24.
Typing Tutor III *(learn to type!)*. . . . . 35.
**SoftStyle**
Colormate Art *(Colormate images)*. . . . . 29.
Colormate *(color printing utility)* . . . . . 49.
Bluestart *(IBM printer driver)*. . . . . 29.
Epstart *(Epson printer driver)* . . . . . 29.
Laserstart *(Hewlett-Packard Laserjet)* . . . . . 59.
Decision Map *(make better decisions!)* . . . 85.
**Software Discoveries**
Record Holder *(data manager)* . . . . . special
**Software Ventures**
Microphone *(communications)* . . . . . 65.
**Solutions, Inc.**
Glue *(creates "print to disk" capability)* . . . 35.
**Springboard**
Art a la Mac Vol. 1-People and Places . . . . 23.
Art a la Mac Vol. 2-Variety Pack . . . . . 23.
Easy as ABC *(ages 3-6, letters)* . . . . . 29.
Early Games *(ages 2-6, shapes, counting)* 29.
**State of the Art**
Electric Checkbook *(print checks)* . . . . . 29.
**Survivor Software**
MacMoney *(financial planner)* . . . . . 49.
**Symmetry**
Acta *(outline/writing desk accessory)* . . . . . 39.
PictureBase *(clip art manager, 512k)* . . . . . 45.
**T/Maker**
ClickArt Personal Graphics, Effects . . .*each* 29.
ClickArt Letters, Publications. . . . . .*each* 29.
ClickArt Holidays . . . . . 29.
Write Now *(new word processor)* . . . . . 119.
**Target Software**
Merriam Webster's Thesaurus . . . . . 29.
MacLightning *(interactive spell checker)* . . 53.
Medical Dictionary. . . . . 53.
Legal Dictionary . . . . . 53.

**MacConnection Special of the Month**
*through January 31, 1987*

**SOFTWARE DISCOVERIES**
**Record Holder**
Flexible and easy-to-use data manager. Great for mailing lists and labels, expense accounts and personnel records. Non copy-protected.

- Strong search capabilities
- Preview reports before printing
- Clear, concise manual & help-screens
- Automatic Save feature

For your Mac or Mac Plus . . . . . $42.

**Telos Software**
Business Filevision *(512k, external drive)* 199.
**Think Educational**
MacEdge II *(math & reading)*. . . . . 28.
Mind Over Mac *(5 challenging games)* . . . 28.
**Think Technologies**
Lightspeed Pascal. . . . . 89.
Lightspeed C *(C Compiler)*. . . . . 129.
**TML Systems**
TML Source Code Library . . . . . 59.
TML Pascal *(compiler, req. 512k)* . . . . . 69.
**TrueBasic**
True BASIC *(fast, flexible & portable)* . . . . . 89.
Algebra, Pre-calculus, Calculus, Statistics, Trigonometry, 3D Graphics, Discrete Math, Probability & Chippendale utilities . . .*each* 36.
Runtime *(create stand-alone applications)* 59.
**Unicorn**
Animal Kingdom *(ages 6-12)* . . . . . 29.
Decimal Dungeon *(math, ages 9 and up)*. . 29.
Fraction Action *(arcade style math game)* . 29.
Mac Robots *(pre-school program)* . . . . . 29.
Math Wizard *(math games, ages 5-10)*. . . . 29.
Read-A-Rama *(reading, ages 5-8)* . . . . . 35.
**William & Macias**
myDiskLabeler *(design & print labels)* . . . . 25.
myDiskLabeler w/color *(req. Imagewriter II)* 34.

## GAMES

**Activision**
Hacker *(you're on your own!)* . . . . . 27.
Hacker II *(breach Russian computer)*. . . . . 30.
Mind Shadow *(Who am I?)*. . . . . 27.
Borrowed Time *(murder mystery)*. . . . . 27.
Shanghai *(Mah Jongg strategy)*. . . . . 27.
Alter Ego *(male or female version)* . . . . . 36.
**Ann Arbor Softworks**
Grid Wars *(3D graphic arcade)* . . . . . $22.
**Artworx**
Bridge 4.0 *(sharpen your skills)* . . . . . 21.
**Avalon Hill**
MacPro Football *(req. 512k)*. . . . . 32.
**Blue Chip**
Millionaire *(stock market)* . . . . . 35.
Tycoon *(commodities)* . . . . . 35.
Baron *(real estate)* . . . . . 35.
Squire *(personal finance, req. 512k)*. . . . . 35.
**Broderbund Software**
Lode Runner *(over 150 levels)* . . . . . 24.
Ancient Art of War *(military strategy)*. . . . . 27.
Toy Shop *(create working models)* . . . . . 39.
**Bullseye**
Ferrari Grand Prix . . . . . 35.
Fokker TriPlane Flight Simulator . . . . . 35.
**Electronic Arts**
Archon *(arcade strategy, req. 512k)* . . . . . 27.
Skyfox *(3D graphics)* . . . . . 27.
One on One/Dr J vs Larry Bird *(req. 512k)*. . 27.
Patton-vs-Rommel *(req. 512k)* . . . . . 27.
Pinball Construction Set. . . . . 27.
**Epyx**
Rogue *(strategy dungeon classic!)*. . . . . 24.
Temple of Apshai *(4 levels)* . . . . . 24.
Winter Games *(Olympic events)* . . . . . 24.
**Hayden Software**
Perplexx *(scrabble-type game)* . . . . . 24.
Sargon III *(9 levels of chess)*. . . . . 29.
**Infinity Software**
Grand Slam *(tennis, req. 512k)*. . . . . 28.
**Infocom**
Leather Goddesses of Phobos, Moonmist, Ballyhoo, Cutthroat, Hitchhiker's Guide, Planetfall, Wishbringer, Enchanter, Trinity, Zork 1, The Witness *(standard)* . . . . . *each* 24.
Zork II, Zork III, Sorcerer, Suspect, Mind Forever Voyaging *(advanced)* *each* 26.
Spellbreaker *(expert)* . . . . . 29.
Invisiclues *(hint booklets)* . . . . . .*each* 6.
**MacroMind**
Maze Wars+ *(play via modem or network)* . 32.
**Miles Computing**
Fusillade *(arcade maze)*. . . . . 21.
MacAttack *(3D tank simulation)* . . . . . 27.
Harrier Strike Mission *(3D flight simulation)* 27.
MacWars *(3D space simulation)*. . . . . 27.
**Mindscape**
Rambo: First Blood Part II . . . . . 24.
James Bond 007: "A View to a Kill" . . . . . 24.
James Bond 007: "Goldfinger". . . . . 24.
Stephen King's "The Mist" . . . . . 24.
Racter *(converse with your Mac!)* . . . . . 27.
Balance of Power *(world politics)* . . . . . 30.

## 1-800/Mac&Lisa 660C

# MacConnection™

MacConnection, 14 Mill Street, Marlow, NH 03456 800/622-5472 603/446-7711

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*Defective software replaced immediately. Defective hardware replaced or repaired at our discretion. Some items have warranties up to five years.

# Ultimate support.

Brataccus *(great graphics, req. 512k)* . . . $30.
Uninvited *(mystery adventure)* . . . . . 30.
Deja Vu *(murder mystery)*. . . . . 33.
**Origin Systems**
Exodus: Ultima III *(fantasy adventure)* . . . . 38.
**PBI Software**
Strategic Conquest *(multi-user)* . . . . . 35.
**Polarware**
Transylvania, Sword of Kadash, Xyphus,
Crimson Crown . . . . . *each* 15.
**Psion**
Psion Chess *(3D and multi-lingual)*. . . . . 31.
**QWare**
Orb Quest *(graphic fantasy adventure)* . . . 29.
**Scarborough**
Make Millions *(business simulation)* . . . . . 29.
**Sierra On-Line**
Championship Boxing *(knock 'em out!)* . . . 25.
Ultima II *(role playing adventure)* . . . . . 25.
**Silicon Beach Software**
Airborne! *(digitized-sound war game)* . . . . 20.
Enchanted Scepters *(sound & graphics)* . . 21.
Dark Castle *(digitized arcade game)* . . . . . 28.
World Builder *(create adventure games)* . . 42.
**Simon & Schuster**
Star Trek—The Kobayashi Adventure . . . . . 24.
**Sir-Tech**
Mac Wizardry *(high-rated adventure)*. . . . . 36.
**Spectrum Holobyte**
GATO *(submarine simulation)*. . . . . 26.
Orbiter *(requires 512k)* . . . . . 27.
Tellstar II *(No. & So. hemispheres, req. 512k)* 45.
**Videx**
MacGammon/Cribbage . . . . . 28.
MacVegas *(7 casino games)* . . . . . 34.

## HARDWARE

**Apricorn**
ApriCord Mac *(Mac Plus parallel interface)* 75.
**AST Research**
AST 2000 *(20 MB, 20 MB tape)* . . . . . 1995.
AST 4000 *(74 MB, 60 MB tape)* . . . . . 4895.
**Cambridge Automation**
MIDI Conductor. . . . . 69.
**Curtis Manufacturing**
Diamond *(6 outlets)* . . . . . 29.
Emerald *(6 outlets; 6 ft cord)* . . . . . 36.
Sapphire *(3 outlets; EMI/RFI filtered)* . . . . . 47.
Ruby *(6 outlets; EMI/RFI filtered; 6 ft cord)* 55.
**Dove Computer**
*Memory Expansion Units*
Mac Snap 524 *(512k to 1 Meg)*. . . . . 159.
Mac Snap Plus 2 *(Mac Plus to 2 Meg)* . . . 309.
Mac Snap 548 *(512k to 2 Meg)* . . . . . 469.
**Ergotron**
MacTilt *(includes external drive bracket)*. . . 75.
MacBuffer 512k . . . . . 369.
MacBuffer 1 Megabyte . . . . . 569.
**Hayes**
Smartcom II *(communications software)* . . 89.
Smartmodem 300, 1200 or 2400. . . . . call
**IOMEGA**
Bernoulli Box *(dual 10-MB w/SCSI)*. . . . . 1869.
Bernoulli Box *(dual 20-MB w/SCSI)* . . . . 2369.
**Kensington**
Mouseway *(mouse tracking pad)* . . . . . 8.
Mouse Pocket *(for your idle mouse)* . . . . . 8.
Mac (Plus), HD, System Saver Cover *each* 9.
Imagewriter (II) Dust Cover . . . . . 9.
AppleTalk Clips . . . . . 11.
Mouse Cleaning Kit w/Mouse Pocket . . . . . 17.
Disk Case *(holds 36 Mac disks)* . . . . . $19.
Disk Drive Cleaning Kit . . . . . 20.
Tilt/Swivel . . . . . 22.
Copy Stand. . . . . 24.
Polarizing Filter . . . . . 34.
Surge Suppressor . . . . . 35.
A-B Box *(specify Mac or Mac Plus)*. . . . . 65.
Control Center. . . . . 65.
System Saver Mac *(complete with fan)*. . . . 65.
**Koala Technologies**
KAT Graphics Tablet. . . . . 139.
MacVision *(digitizer)*. . . . . 175.
**Kraft**
QuickStick *(Mac joystick)* . . . . . 42.
**Mirror Technologies**
FastPort *("SCSI" for your 512k Mac)* . . . . 139.
MagNet 20x *(w/MacServe)* . . . . . 899.
Magnum 20 Tape Backup . . . . . 929.
MagNet 30x *(w/MacServe)* . . . . . 995.
MagNet 40/40*(40MB, 40MB tape)*. . . . . 2559.
**Personal Computer Peripherals**
MacBottom Hard Disk 20MB *(SCSI)* . . . . 879.
**PKI**
McD 800k External Drive. . . . . 199.
**Summagraphics**
MacTablet 6″ x 9″ *(stylus driven)*. . . . . 265.
MacTablet 12″ x 12″ *(sketching)* . . . . . 369.
**Systems Control**
MacGard *(surge protection)*. . . . . 55.
**Thunderware**
Thunderscan *(high-resolution digitizer)* . . 175.
Mac Plus Power Accessory . . . . . 29.
**Western Automation**
DASCH RAMdisk 1000k . . . . . 349.
DASCH RAMdisk 2000k . . . . . 399.

## DISKS

### Single-sided Diskettes

**BASF** 3½″ Disks *(box of 5)* . . . . . 9.
**Sony** 3½″ Disks *(box of 10)* . . . . . 17.
**Verbatim** 3½″ Disks *(box of 10)*. . . . . 17.
**MAXELL** 3½″ Disks *(box of 10)* . . . . . 17.
**Fuji** 3½″ Disks *(box of 10)* . . . . . 17.
**3M** 3½″ Disks *(box of 10)*. . . . . 19.

### Double-sided Diskettes

**BASF** 3½″ Disks *(box of 5)* . . . . . 14.
**Sony** 3½″ Double-sided Disks *(10)* . . . . . 26.
**Verbatim** 3½″ Double-sided Disks *(10)* . . . 26.
**MAXELL** 3½″ Double-sided Disks *(10)* . . . 26.
**Fuji** 3½″ Double-sided Disks *(10)* . . . . . 26.
**3M** 3½″ Double-sided Disks *(10)* . . . . . 27.

## INFORMATION SERVICES

**Compuserve**
Compuserve Information Service. . . . . 27.
**Dow Jones**
Dow Jones News/Retrieval Membership Kit 24.
**Source Telecomputing**
The Source *(subscription & manual)* . . . . . 30.

## ACCESSORIES

**Automation Facilities**
Floppiclene Drive Care Kit . . . . . 15.
Floppiclene Refill . . . . . 10.
MacPak Complete Care System . . . . . 29.
**Clean Image Ribbon Co.**
Clean Image Ribbon Kit. . . . . 12.
**Computer Coverup**
External Disk Drive Cover . . . . . $4.
Imagewriter (II) Cover . . . . . 8.
Mac (Plus) & Keyboard *(two covers)* . . . . . 10.
**Diversions**
Underware Ribbon *(iron-on black transfer)*. . 9.
Multi-color Transfer Ribbon . . . . . 19.
ColorPack *(includes Colorpens)*. . . . . 19.
**Environmental Software Company**
*MACATTIRE (Rip-stop nylon covers)*
External Drive Cover *(400k or 800k)*. . . . . 7.
Imagewriter (II) Cover. . . . . 11.
Wide Imagewriter Cover. . . . . 13.
Mac (Plus) & Keyboard Cover . . . . . 15.
Laserwriter Cover. . . . . 17.
Mac (Plus) & HD20 & Keyboard Cover . . . . 18.
**I/O Design**
Imageware II *(Imagewriter II carry case)* . . . 59.
Macinware Plus *(Mac Plus carry case)* . . . . 69.
**Innovative Concepts**
Flip & File Micro *(holds 25 disks)* . . . . . 9.
Flip & File *(holds 40 disks)* . . . . . 18.
**Innovative Technologies**
The Pocket Pak *(holds 6 disks)*. . . . . 9.
The Easel *(holds 20 disks)* . . . . . 12.
The Disk Directory *(holds 32 disks)* . . . . . 18.
The Library *(carousel, holds 80 disks)* . . . . 29.
**Kalmar Designs**
Teakwood Roll-top Case *(holds 45 disks)* . . 15.
Teakwood Roll-top Case *(holds 90 disks)* . . 22.
**Magnum**
Mouse Mover *(let your mouse ride!)* . . . . . 14.
**Moustrak**
Moustrak Pad *(standard 7″ x 9″)* . . . . . 8.
Moustrak Pad *(large 9″ x 11″)*. . . . . 9.
**Ribbons Unlimited**
Imagewriter Color Ribbons . . . . . 5.
Imagewriter Ribbons Six Pack . . . . . 25.
**Smith & Bellows**
Mahogany Disk Case *(holds 90 disks)* . . . . 28.
Mac Plus Pack *(covers & disk case)* . . . . . 39.

## OUR POLICY

- We accept VISA and MASTERCARD.
- No surcharge added for charge orders.
- Your card is not charged until we ship.
- If we must ship a partial order, we never charge freight on the shipment(s) that complete the order.
- No sales tax.
- All U.S. shipments insured; no additional charge.
- APO/FPO orders usually shipped 1st Class Mail.
- Allow 1 week for personal and company checks to clear.
- UPS Next-Day-Air available.
- COD max. $1000. Cash or certified check.
- 120 day limited warranty on all products.*
- To order, call us anytime Monday thru Friday 9:00 to 9:00, or Saturday 9:00 to 5:30. You can call our business offices at 603/446-7711 Monday through Friday 9:00 to 5:30.

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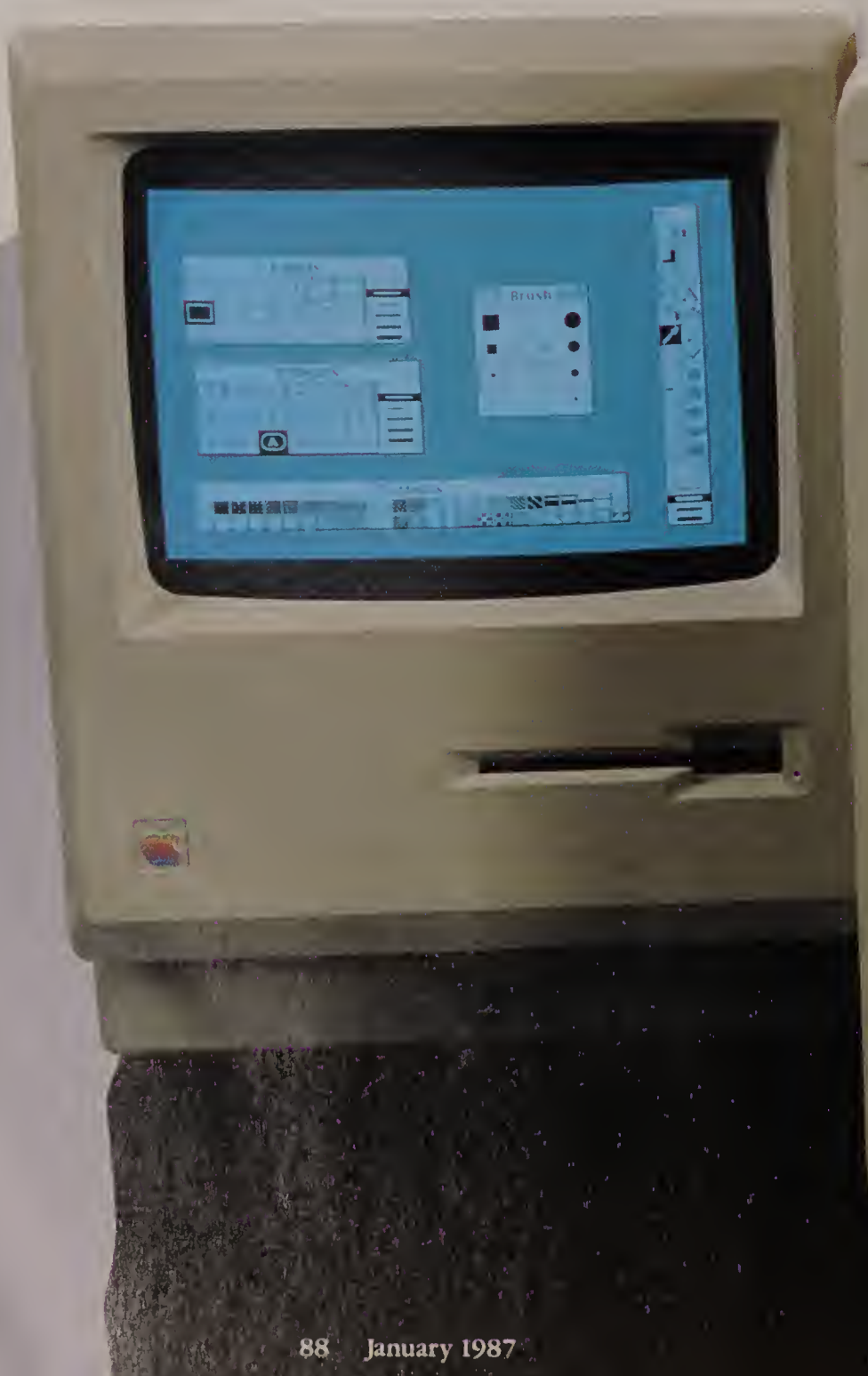
Accounts on net terms pay actual shipping
**Continental US:** For printers and drives add 2% for UPS ground shipping (call for UPS Blue or UPS Next-Day-Air). For all other items, add $2 per order to cover UPS shipping We will automatically use UPS 2nd-Day-Air at no extra charge if you are more than 2 days from us by UPS ground **Hawaii:** For printers and drives, actual UPS Blue charge will be added For all other items, add $2 per order. **Alaska and Outside Continental US:** Call 603/446-7711 for information

# Up on the Big Screen

*Taking the measure of three large-screen Mac monitors*

***by Danny Goodman***






PHOTOGRAPHS BY FRED STIMSON

As kids, most of us played with the discarded tube from a paper-towel roll, imagining it to be a telescope. When we peered through the tube, we could see only a fraction of our normal field of view. To see things in their entirety, we had to wave the tube round and round. Little did we know that one day we would "scroll" our computers around in a similar way. In many applications, the view on a monitor is only a small portion of an entire document. The Macintosh in particular has been criticized for its limiting 9-inch peephole.

While it appears that Apple will soon offer optional solutions for increased screen size in one or more expandable Macintoshes, third-party developers are forging ahead in the quest for monitors that show current Mac users more of their work.

I spent many hours examining three big screens to find out how well they function with popular Mac programs and, more important, whether their hefty price tags—$2000 to $3000—can be justified by improved productivity. The models I reviewed are the MegaScreen, by MicroGraphic Images; the Big Picture, by E-Machines; and Radius's Full Page Display (FPD).

The MegaScreen and the Big Picture display a horizontally oriented, or *landscape,* view and disable the Macintosh internal screen. On the other hand, the FPD shows a vertically oriented, or *portrait,* display, and the FPD system keeps the Mac internal screen alive for viewing desk accessories, separate program modules, or an additional segment of the document shown on the large screen.

One caveat: intense competition among big-screen makers will keep them leapfrogging each other with improvements for a while. What you'll read here about software compatibility and other issues is a

snapshot of the situation in October 1986. Some problems will have been solved by the time you read this, while others will just be surfacing. Use this review to avoid pitfalls and to be a more critical consumer.

### Software Compatibility

The three screens under consideration do more than magnify the normal contents of a Mac screen for group viewing (as does, for example, the MacVideo Processor, from MultiVideo). They actually display more of your documents: more lines of text, more spreadsheet cells, larger portions of pictures.

To achieve this, the monitors require extra circuitry inside the Macintosh and additional system software. The software intercepts video output going to the computer's internal screen and tells your application program that it can stretch its window-display wings. However, not all programs accept the invitation. Applications seem to fall into three categories.

Game programs and several programs, like *MacPaint,* that don't create standard, expandable windows (those with scroll bars) are unable to take advantage of the large screens. The second category includes programs like *MacWrite* and *FullPaint,* which have expandable screens but also limit the size of the display. The Big Picture and the FPD bypass these limits with varying degrees of success.

Programs in the third group let you adjust window size at will. According to the big-screen makers, applications that stick to Apple's programming guidelines should work properly with the expanded monitors. Fortunately, most popular productivity software falls into this category. The most cooperative of these programs check the system—as adjusted by the screen software—for the maximum screen size and automatically open new windows that fill the entire space. Some programs, however, open default (new) windows in a size that fills only a traditional Mac screen; you must then manually expand the window to fill the screen.

Even applications that work with big screens can encounter difficulty displaying, updating, and scrolling information in oversized windows. This tendency showed up in an uncomfortably high percentage of Microsoft products, including *Word* version 1.05, *Excel* version 1.00, and a prerelease version of *Works* I tested. Microsoft is aware of the difficulties and is working toward compatibility with as many big screens as possible.

### Installation

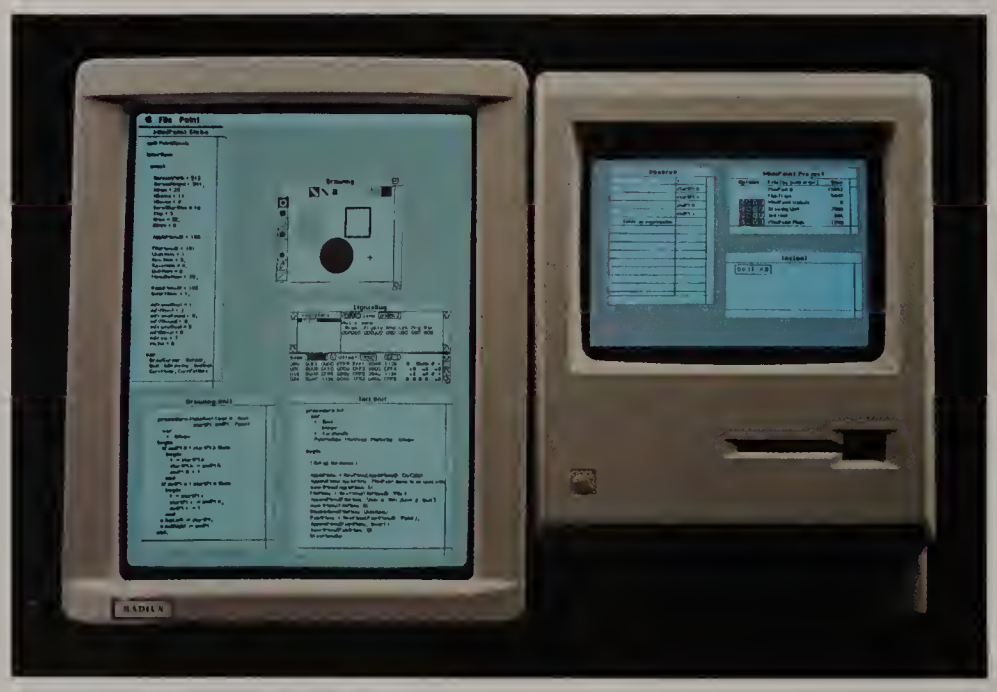
All three screens require dealer or factory modification of your Mac. The FPD installation is performed at Radius's factory and involves unsoldering the Mac's

## Applications: Programmer's Delight

Big screens give programmers using advanced Mac programming environments like the *LightSpeed* series (*C* and *Pascal*) the ability to comfortably spread out six or more windows, reducing frustration by a factor of several points.

In *LightSpeed Pascal,* for example, you can have a project window and several edit windows open for instant access to various modules (units) of your program. Then, when it's debugging time (when isn't it?), you can open the Observe and Instant windows, plus any windows your program generates, without any of the windows overlapping. In addition, the Observe window can be made long enough to display dozens of variables at once as you step through the program.

If you program for a living in a highly interactive environment, you should put a big screen on your list of things to buy—right after a hard disk.



LightSpeed Pascal *on the Radius FPD*

# Applications: The Business Big Four

Among the standard productivity applications—spreadsheets, database management, word processing, and telecommunications—all but the last benefit from big screens.

A landscape screen is fantastic for spreadsheet fanatics. With the right font and column width, you can display a year's worth of columns, plus labels and totals. A beta-test version of *Excel* 1.03 I have displays a default worksheet of 15 columns by 62 rows on the MegaScreen. *Jazz*'s spreadsheet has no problem displaying 14 columns by 50 rows on the Big Picture.

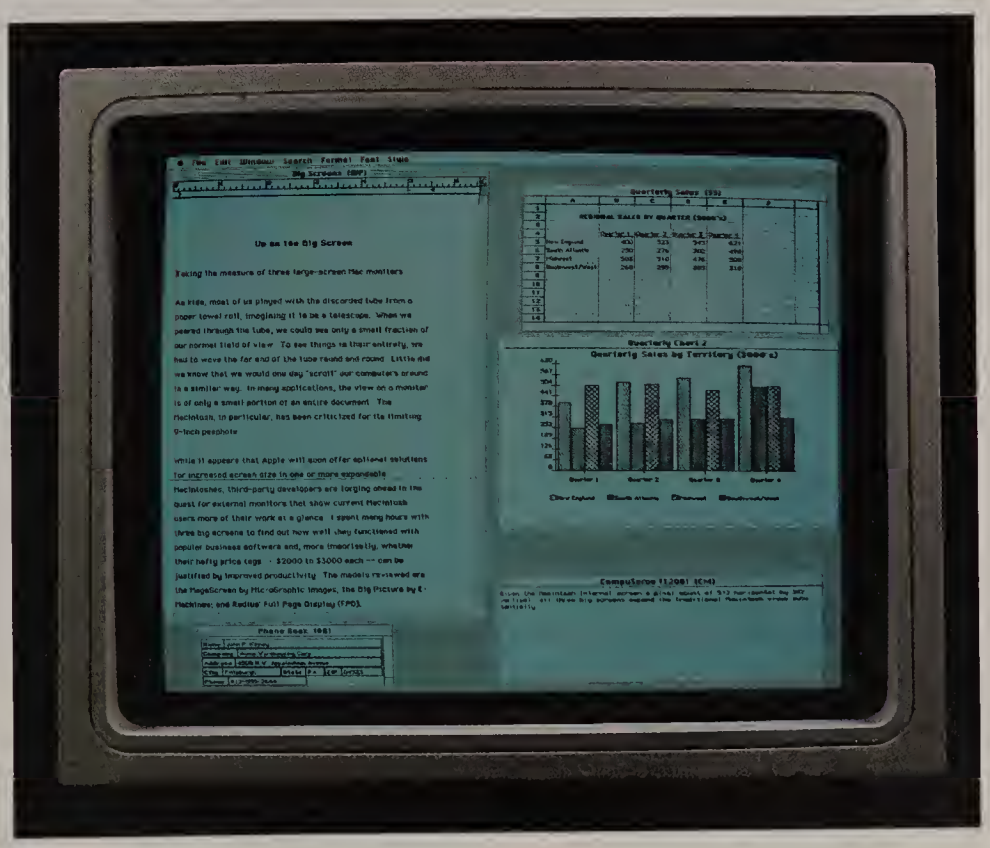
Database programs on big screens let you design more readable entry forms and on-screen reports. Since databases are often forms-oriented, a portrait display like the FPD's is ideal. And having the extra space available while you're building relational databases with programs like *Reflex* and *Helix* makes the job much easier.

Big screens are great for writers and editors. The ability to see a complete page of a document or to look at notes in separate windows while you're writing can be a big plus. *MacWrite* can be tricky with some displays, however (see article), and *Microsoft Word* version 1.05 doesn't update the bottom of a page-long screen correctly. Be sure the software and hardware you're considering meet your requirements.

If you're a fan of integrated software, such as *Microsoft Works* and *Jazz,* you'll think you've died and gone to Heaven on a big screen, especially if you're using one of the landscape monitors. You'll finally have enough space to stretch out and simultaneously keep many large windows open and in the clear. For example, you can display a full-page word processing document while keeping your phone number database window tucked away in a corner.

You could conceivably create a multiple-window environment to use as your regular desktop. In other words, the big screen can heighten the sense of integration intended by the program's designers.

While all these application types are enhanced by a big screen, whether the improvement is enough to warrant the dollar outlay is another question. In general, the more hours you typically spend in front of your Mac each day, the more valuable you'll find a big screen.



Microsoft Works *on the MegaScreen*

68000 microprocessor, installing a socket in its place, and adding a circuit board containing both your 68000 and Radius's proprietary circuitry. The Big Picture requires only a clip-on board and a cooling fan, both of which can be installed by a dealer. The MegaScreen uses two boards and a fan installed by means of a 68000 clip and three soldered connections. A dealer can also perform this conversion.

With these extra boards, your big screen is unlikely to leave you room for an internal hard disk or other add-ins, although E-Machines is working on HyperDrive compatibility. The Big Picture also claims to be compatible with some Levco memory upgrades.

Cabling between the Mac and the three big screens is similar. The FPD and the Big Picture have connectors that fit inside the small cutout on the Macintosh rear panel where the security kit is normally installed. The MegaScreen's connecting cable is wired directly to the Mac and comes out through the same

hole. Obviously, this means that the security kit is out of the question for a large-screen setup.

### System Software

Because the Macintosh was not designed to work with an external, oversized monitor, each big screen has its own software that reconfigures your Mac. The MegaScreen comes with a disk that includes a configuration program and a start-up program called *MegaBoot*. You must set *MegaBoot* as your Set Start-up application.

The Big Picture comes with a disk that has a system patch program in the form of a System file that the Mac's new ROM reads upon start-up. To make the Mac use this patch, you simply place a copy of it (all of 2K) in your System Folder. It won't modify your System file.

Radius's system software is the simplest. It's all in ROM on the Radius circuit board, so you don't have to worry about putting an extra file on your system disks. As with the Big Picture, the FPD circuitry detects the connection of the external monitor upon start-up. If no monitor is connected, video output automatically heads to the internal screen.

### Getting Physical

"Big-Screen Specs" compares the sizes of the three screens. The diagonal measure of screen size is much less important than the actual number of pixels on the screen display. In addition, the orientation of a screen (landscape versus portrait) plays a crucial role in determining which screen is appropriate for the applications you typically run.

## Big-Screen Specs

| | Macintosh | Big Picture | MegaScreen | Radius FPD |
|---|---|---|---|---|
| **Mechanical** | | | | |
| Screen size (diag.) | 9″ | 17″ | 19″ | 18″ |
| Orientation | landscape | landscape | landscape | portrait |
| Footprint (screen + computer) | 9½″ x 9¾″ | 20″ x 20″ | 27″ x 15″ | 21¾″ x 13½″ |
| **Display Characteristics** | | | | |
| Pixel display | 512 x 348 | 1024 x 808 | 1024 x 900 | 640 x 864 |
| Pixel density (dpi) | 72[1] | 80 | 70 | 77 |
| Screen refresh rate (Hz) | 60 | 60 | 58 | 67 |
| **Hardware Issues** | | | | |
| Video RAM[2] | 22K | 128K | 128K | 128K |
| Mac modifications | | clip-on board | clip-on and solder | solder and 68000 socket |
| Macintosh fan | | yes | yes | in monitor |
| Installation | | dealer | dealer | factory |
| Drill holes | | no | yes | no |
| NTSC video output | no | no | yes | no |
| Switched AC for Mac | | yes | no | yes |
| Brightness control | front | front | rear | rear |
| **Software Issues** | | | | |
| Patch software | | Resource file | Set Start-up program | FPD ROM |
| Screen-saver | no | no | no | yes |
| MacWrite in full screen | | yes | no | yes |
| Switcher-compatible[3] | yes | yes | yes | yes |
| Screen dump size | 4¾″ x 7⅝″ | 8″ x 10″ | Mac screen[4] | 8″ x 10″[4] |

[1] Varies somewhat from unit to unit.

[2] The three big screens supply their own RAM.

[3] "Save Screen" option must be turned off.

[4] Upper-left corner of screen only.

# Applications: Graphics

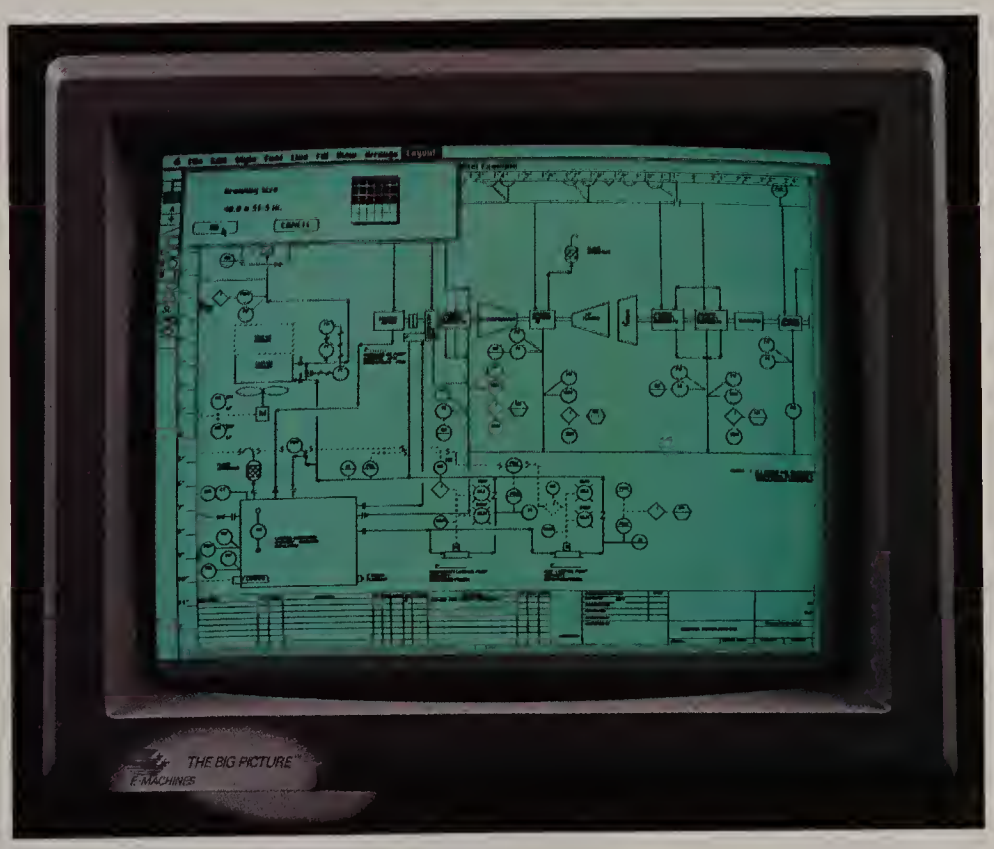
As the most visual of computer-related tasks, graphics benefits tremendously from big-screen monitors. Large drawings and charts can suddenly be viewed as a whole instead of as a collection of details.

Drawing programs such as *MacDraw* can produce clearer renditions of multiple-page drawings. You can build and select larger groups without scrolling as frequently and work with more complete depictions of zoomed views and orthogonal views with dedicated CAD programs such as *EZ-Draft, MacDraft, MiniCAD,* and *MGM Station.* CAD programs that let you manipulate multiple documents have room to juxtapose symbol libraries alongside architectural and engineering plans.

Paint programs like *GraphicWorks* take advantage of increased screen area by supplying bigger normal and magnified views. Most programs are limited to 8- by 10-inch portrait documents. *GraphicWorks* lets you work with opposing pages with its ShowPage option. Programs that permit multiple windows and documents have more flexibility for cutting and pasting between clip-art libraries and composite images. Before buying a big monitor, however, keep in mind that not all paint programs currently let you view documents larger than the Mac's screen.

Solids-modeling programs like *Pro3D* provide better multiple views of an object and let you build larger models. Since the number of polygons, rather than the image size, determines program performance, you can benefit from larger views without any degradation.

Presentation graphics programs like *CricketGraph* and *More* enable you to view larger and more detailed charts with fewer restrictions on the width of labels and legends. Charts and data windows can be viewed simultaneously, letting you make adjustments to either more easily while viewing results. Be careful, however, since some screen makers have reported incompatibility problems with programs like *MacSurf* and *MacSpin.*




MacDraft *on the Big Picture*

Of the three monitors, the FPD takes up the least amount of space. The larger screens, combined with a Mac, have the potential to take over your entire desk. E-Machines, at least, designed the rear area of its monitor chassis so that you can partially nest the Mac behind it while retaining relatively easy access to the internal disk drive.

**Sizing Up the MegaScreen**

Although it was the only one of the three models I tested that was not a prerelease unit, the MegaScreen was the least impressive.

While the controlling software allows the pointer to traverse the screen with one swing of your wrist, the cursor action on the screen is sometimes jerky when you move slowly. Unless you're good with a mouse, you'll have difficulty pinpointing graphics-palette tools in programs like *FullPaint.* The manual suggests adjusting the mouse action in the Control Panel to the Tablet setting, which establishes a one-to-one relationship between mouse and screen movement. This means, however, that you must devote a MegaScreen-size portion of your desk to mouse operations. Also, in my test the monitor stretched images slightly in a horizontal direction more than the other monitors. This particularly affected circles and text characters.

In addition, the MegaScreen's fan was so loud it drowned out an HD-20 fan and a space heater in my office. The connector cable that permanently dangles from the security hole complicates the process of packing a Mac for traveling. And the MegaScreen was the only monitor that failed to provide a power outlet for the Mac—which means it took up one more outlet on my already crowded AC power strip.

Just as this article was going to press, MicroGraphic announced that it was bundling the *Visions-Plus* software interface with the MegaScreen. Developed by Software Labs of Fremont, California, *Visions-Plus* enables a Mac-MegaScreen combination to emulate the VT-100, Tektronix 4014, and D200 computers. You can also attach up to four MegaScreen units to a host computer, such as the DEC Microvax II, running UNIX, VMS, or AOS/VS. *Visions-Plus* lets you divide the display into terminal windows of various sizes to show multiple processes running on the host computer. This software could be useful if, for example, you wanted to turn your big-screen Mac into a graphics workstation.

One factor in the MegaScreen's favor is that its 1024- by 900-pixel display is the largest of the three: 5.26 times the area of the Macintosh internal display. The MegaScreen is exactly twice as wide as the internal Mac screen, and it's 2.63 times deeper.

**Getting the Big Picture**

E-Machines' big-screen entry is slightly smaller than the MegaScreen, measuring 1024 by 808 pixels, or 4.75 times the area of the Mac screen. Despite its comparatively shallow display, the Big Picture is capable of displaying up to 10.5 inches down a page.

The Big Picture's display surface—the phosphor applied to the inside of the picture tube—is different from that of virtually any consumer-priced microcomputer. The surface is called *paper-white* phosphor and has a slight yellow tinge. Those who have witnessed high-end Xerox workstation screens in action will notice a kinship. I like the Big Picture's hue, but it's possible not everyone will.

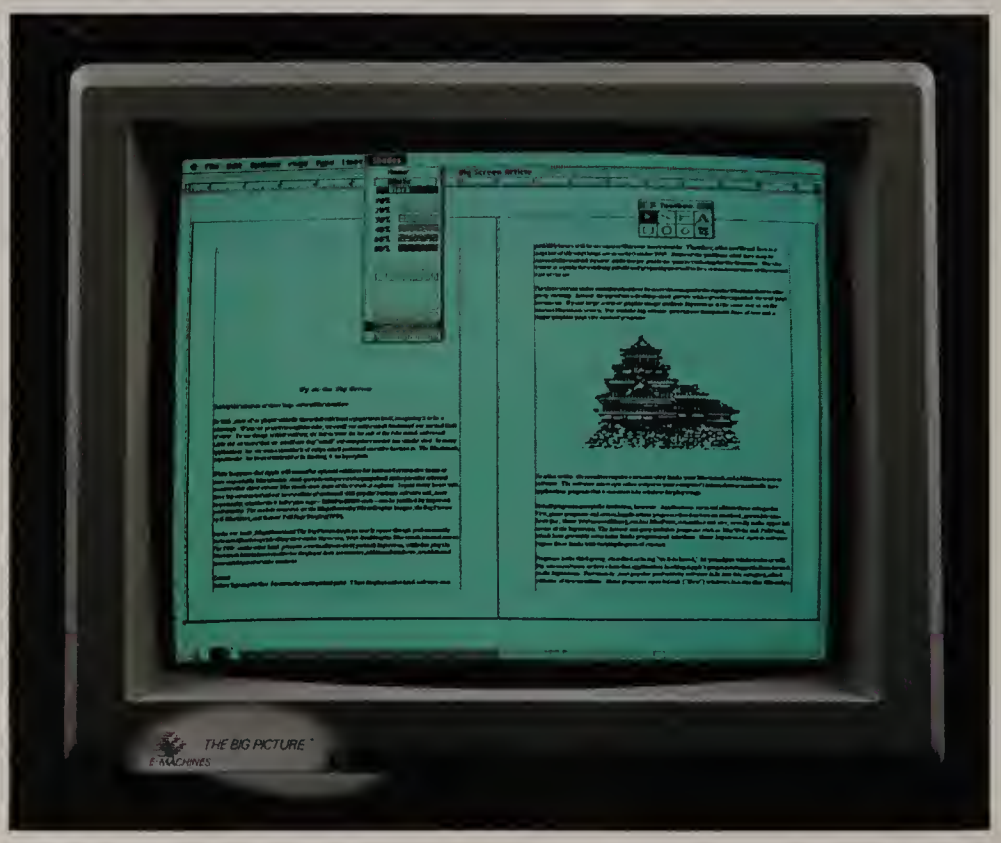
In the lower three-quarters of the screen, the Big Picture appeared to bear out the company's claim of a

## Applications: Desktop Publishing

One of the stumbling blocks to productivity with page-makeup software on the Macintosh is that the internal Mac screen lets you see very little of the page you're designing. To see what you're doing, you have to switch constantly between the window for placing elements and the view that shows the entire page in miniature. Big screens put an end to this madness.

All the monitors reviewed here can show you an entire page at full size in the pasteup window. The vertical display of the Radius FPD works well with *PageMaker* version 1.2, because the orientation of a single-page layout is vertical as well. For more precise placement of elements, the Big Picture and MegaScreen's 1024-pixel-wide displays let you see the full active width of a standard *PageMaker* page at a 200 percent enlargement.

Unfortunately, *PageMaker* 1.2 won't let you use the wide screens to view two full-size facing pages; you must still use the miniature view to see two pages at once. Aldus says *PageMaker* 2.0, which may be in distribution by the time you read this, will enable you to work on facing pages in nearly full size on the Big Picture and the MegaScreen.




PageMaker *2.0 on the Big Picture*

higher pixel density than the Macintosh—80 dots per inch versus the Mac's 72. The result is a perceived increase in overall display quality. Geneva fonts, for example, appear to be made up of smooth lines rather than separate dots. Cursor movement is generally smooth, without flicker.

For programs that normally limit the size of an expandable window, such as *MacWrite* version 4.5 or an old edition of *Art Grabber* still in my system, E-Machines' software allows you to stretch windows beyond their usual limit by holding down the Option key while dragging. A planned software improvement will let you select an 8- by 10-inch area of the screen to be saved as a *MacPaint* document when you perform a ⌘-Shift-3 screen dump.

### A Full Page and Then Some

Radius, a start-up company formed by three members of the original Macintosh development team, is offering the Full Page Display as its first product. Aided by programming help from the legendary Andy Hertzfeld, the FPD is the only big screen that can work in combination with the Mac screen.

As its name implies, the FPD shows one full page of a text or graphics document. Actually, its 640- by 864-pixel screen is large enough for the European A4-sized page, which is slightly larger than the American 8½- by 11-inch standard.

Thirty-two kilobytes of ROM instructions supplied with the monitor perform such tasks as detecting whether you have the FPD attached (if not, the Mac reverts to its built-in screen). The ROM program also displays a control panel that lets you configure your setup for combination display, FPD only, or Mac only. You can even specify on which side of the FPD your Mac will sit.

Other software touches include an option that switches the menu bar font to 16-point size for increased readability. This is not as trivial as it sounds, since one's tendency with any big screen is to sit further away from it to see "the big picture." You can also convert the cursor, pointer, and dreaded wristwatch to four times their normal size.

At your request, Radius's software will place a zoom box on expandable application windows that don't normally provide one. It's best to keep this option engaged, because the Radius zoom box combined with the ⌘ key lets you instantly switch a window between the FPD and Mac screens.

When both screens are engaged, the Mac screen is like an extra window to one side of the FPD. In a typical installation, the top of the Mac screen is below the top of the FPD; to view different parts of the same window in both screens, you can adjust the "logical" screen height on the Macintosh side. An elevator control in the FPD control panel lets you do just that. As you adjust the control, a test window straddles both displays; you slide the elevator until both halves of the window are even.

Working with a split screen can be practical in some applications, particularly those that use multiple windows or require the frequent aid of desk accessory windows. For example, if you're using *PageMaker,* you can use the FPD side of the display for page makeup and the Mac side for the Tools palette window and the Scrapbook. In an integrated program, such as *Jazz,* you can place separate application windows on each monitor. Or if you're using a multiple-window application, such as a programming language, you can leave windows containing reference material on the Mac screen and use the FPD as your main work screen.

Although having different screens for different windows is valuable, looking at one window on two screens is frequently unsatisfactory—the break in the middle is too distracting. In addition, the pixel densities of the two displays I used were not identical (you can't blame Radius for this; there have been slight variations in the display density of Mac screens over the years), so, for example, spreadsheet rows did not line up between monitors. Also, the different phosphor colors of the FPD and most Macintosh tubes (again, not all Macs are identical) can be rough on the eyes when you're glancing back and forth between screens. Cursor movement is very smooth, though, and moving between screens doesn't slow things down.

### Paying the Price

Since any one of these displays costs more than the street price of a Macintosh Plus, a big screen is an investment to make cautiously. None of the displays provided an undistorted image across the entire screen; a purist might reject all three on that account. Other users may not find the degree of distortion objectionable.

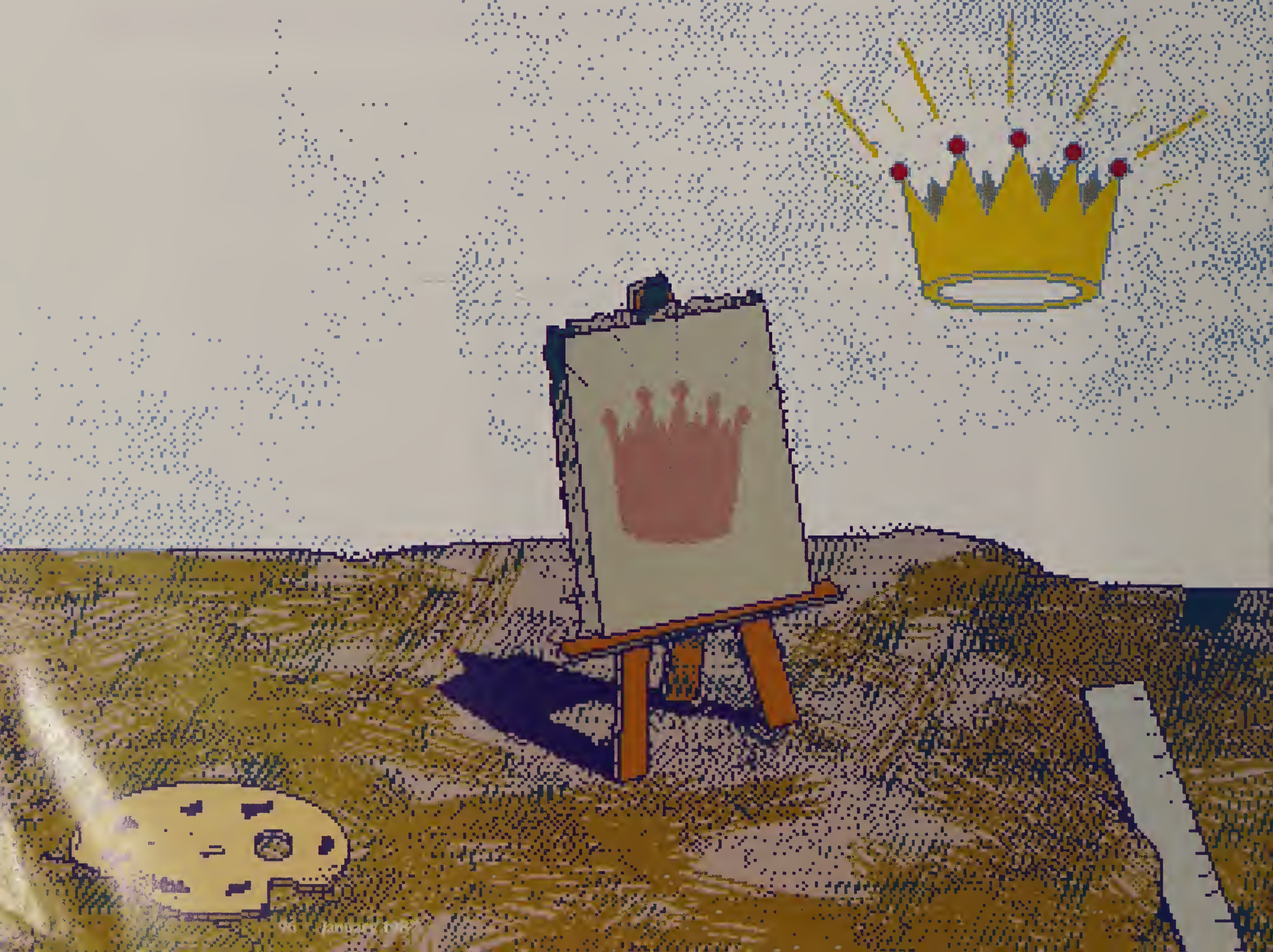
Of the two landscape screens, the Big Picture is a more polished product as of this writing. And I don't think many users will pay the MegaScreen's hefty price ($1000 more than the Big Screen's) for the ability to connect its modified Macintosh to a composite TV or projection monitor, especially considering the MegaScreen's roaring fan and jumping cursor.

Because the Big Picture and the FPD cost the same, most purchase decisions will be between these two. You'll then have to examine your applications and documents to see which orientation—landscape or portrait—works best for you. For spreadsheets and graphics, the Big Picture is the only choice. Word processing and forms-driven users should find the FPD quite serviceable. The FPD has the advantage of clever firmware and a smaller footprint than its competitors'. In general, however, the Big Picture will handle practically any application. □

See *Where to Buy* for product details.

# MacPaint's Successors

*Five paint programs cross brushes to determine the inheritor of the Mac graphics crown*



*by Adrian Mello*

Machines don't have souls, but if they did, the Macintosh's soul would surely be *MacPaint*. *MacPaint*'s charm and elegant design were the initial inspiration of many Mac owners' fascination with the machine, and more than a few Macs left the showroom as a direct result of *MacPaint*'s seductive graphics talents. Since *MacPaint*'s introduction in 1984, however, several other paint packages have appeared: CheapPaint, *MacBillboard, FullPaint, GraphicWorks,* and *SuperPaint.* Most of these programs offer superior features and better value compared with *MacPaint* (see "Features Sketch" for a comparison). Furthermore, new Macs are not bundled with *MacPaint,* leaving new owners to choose for themselves among the contenders for *MacPaint*'s throne.

**MacPaint**

The Mac's native graphics program is the yardstick for evaluating standard paint features. The newcomers offer most of *MacPaint*'s features, and then some. In *MacPaint* you draw straight and free-form lines of variable densities and patterns with tools like the pencil, the paintbrush, the spray can, and the straight line tool; specialized tools let you draw circles, rectangles, and polygons. You select areas of a drawing with a rectangular marquee or a lasso (for more precise selections) and manipulate them in various ways: flip, rotate, duplicate, or resize, to name a few. A text tool lets you add different fonts, styles, and sizes of text, but the characters are only pictures, or *bit maps,* and can't be edited as with a word processor.

One of *MacPaint*'s most useful features is FatBits—a magnified view that lets you edit individual pixels. Other standard features include a reduced view of an entire page, an Undo command, and a paint bucket, which lets you fill shapes with different patterns. The program's chief limitations are its lack of scroll bars and its inability to work with multiple windows.

*MacPaint*'s programmer, Bill Atkinson, deserves recognition for laying the foundation for the more powerful paint programs that have followed. However, Apple's decision not to upgrade the current version of *MacPaint* has made the program uncompetitive in terms of features and value.

**CheapPaint**

If you like the idea of having a paint program available for on-the-spot illustrations, consider CheapPaint. CheapPaint is a desk accessory that works with the Scrapbook to let you create, edit, and save bit-mapped drawings within many applications. Furthermore, CheapPaint uses only 27K of disk space, making it a good choice for Mac owners who want to combine programs on 400K floppy disks. CheapPaint lacks the sophisticated features of *FullPaint, GraphicWorks,* and *SuperPaint,* but it's great for adding bit-mapped images to *MacDraft* or *MacDraw* and illustrating word processing documents.

Opening the CheapPaint desk accessory shows every item in the Scrapbook in its own "easel"—a resizable drawing window without scroll bars (see Fig-

JOHN HERSEY

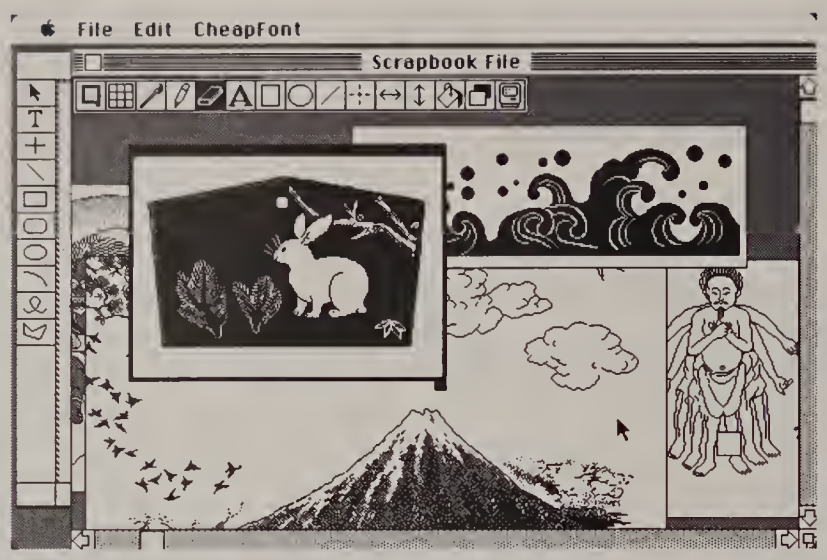



***Figure 1***
*In CheapPaint all drawing and text entry are accomplished within easels. The CheapPaint window (with scroll bars) serves only as a background. Specialized tools let you cycle through buried easels and change Scrapbook files.*

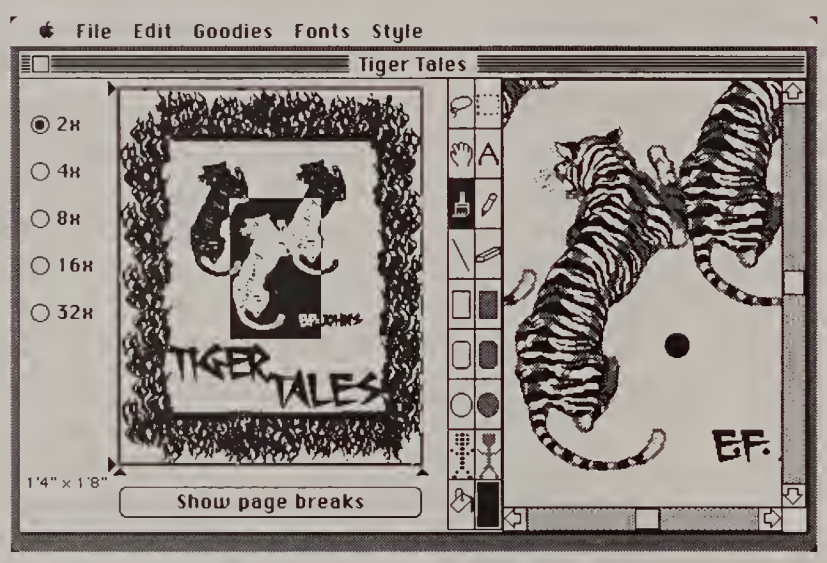



***Figure 2***
*This book cover design demonstrates* MacBillboard's *split-window editing feature. The full page is displayed on the left and includes buttons for sizing enlargements and cropping arrows for choosing a specific section of the drawing for printing. The small figures near the bottom of the tool palette let you increase or decrease drawing magnification.*

ure 1). In addition to editing Scrapbook drawings, you can select a new easel and create a drawing on the spot.

CheapPaint provides about 85 percent of *MacPaint*'s features in a simpler, if slightly less serviceable, package. *MacPaint* feature equivalents include pencil, paintbrush, paint bucket, circle, rectangle, line, text, selection rectangle, eraser, and a single magnification similar to FatBits. Notable exceptions are the spray can and the lasso. In terms of performance, CheapPaint is adequate. Text entry is responsive, but wide, rapid sweeps of the paintbrush or the eraser are completed with a noticeable lag compared with *MacPaint*.

CheapPaint is one of a collection of utilities offered on the MacroMind Utilities Disk (M.U.D.). One of the utilities, Art Grabber+, complements CheapPaint by letting you transfer *MacPaint* files into other programs with a minimum of fuss. Although CheapPaint is often an adequate replacement for stand-alone paint packages, I don't recommend it to users who spend a lot of time fine-tuning illustrations; demanding applications require a more complete set of features.

### MacBillboard

Another bargain-basement entry in the paint contest is *MacBillboard,* a shareware program from CE Software. Sometimes, in the dogged search for the best deal, bargain hunters miss the fire sale upstairs. Even at $35, *MacBillboard* is not much of a bargain compared with competing paint programs—already among the best buys in Macintosh software. Still, it does have a generous set of features, including three bit magnification levels and a marquee that scales selections down to one-quarter size and enlarges up to ten times (for a more complete review, see *Reviews,* November 1986). You can edit pictures in the regular graphics window and simultaneously view the results in a reduced full-page view (see Figure 2). As implied by its name, *MacBillboard* lets you print banners and poster-sized images up to 32 times their original size.

Despite its numerous features, *MacBillboard* lacks polish. The program has an unrefined appearance and poor screen performance. Characters appear on screen long after you type them, and languid visual feedback makes it difficult to reposition images and select tools accurately. I recommend *MacBillboard* only to the most frugal software buyers. If you like the program's mix of features, you can get a more polished product with similar features by spending a little more money on *GraphicWorks.* On the bright side, the program's shareware distribution scheme lets you test-drive the program before deciding whether you want to buy. And as shareware, the program promises to be continually upgraded at no cost to the user.

### FullPaint

*FullPaint* might just as well have been labeled "*MacPaint* version 5.0." The program bears a striking resemblance to *MacPaint* but is quite literally full of improvements (see *Macware Reviews,* September 1986). *FullPaint* makes use of the entire screen by letting you hide the menu bar and scroll bars, as well as hide and reposition palettes. You can also open up to four documents at once, each appearing in its own window. With multiple windows, you can cut and paste among several documents, use the windows as clip art palettes, or compare drawings side by side. Other significant improvements include a full complement of keystroke shortcuts, special effects, and the ability to select areas larger than the drawing window.

*FullPaint* has several precision-oriented features. Drawing rulers and a grid make it easy to align and measure objects. As you draw a shape, you can see readouts for cursor position and the shape's height, width, and diagonal measurements (see Figure 3). An accompanying utility program called LaserPrint lets you edit drawings to take advantage of the LaserWriter's high-resolution printing. LaserPrint divides a document into either 4 or 16 new documents, each representing a subsection of the original document. You can then edit each subsection in detail and recombine the enhanced drawing for laser printing at 150 or 300 dots per inch.

Ann Arbor Softworks has improved *FullPaint* since its first release by removing copy protection—the program's only major problem. Copy protection has also been removed from LaserPrint, and a new utility

## Features Sketch

| | MacPaint | CheapPaint | MacBillboard | FullPaint | GraphicWorks | SuperPaint |
|---|---|---|---|---|---|---|
| **General** | | | | | | |
| Version reviewed | 1.50 | 1.00 | 4.01 | 1.0 Enhanced | 1.00 | 0.95 |
| Minimum memory required | 128K | 512K | 512K | 512K | 512K | 512K |
| Save/open MacPaint files | ● | n/a | ● | ● | ● | ● |
| Save as PICT file | | n/a | | | | ● |
| Application size | 59K | 27K | 99K[1] | 147K[2] | 158K[3] | 140K |
| Price | $125 | $49.95 | $35 | $99.95 | $79.95 | $99.95 |
| **Screen Layout** | | | | | | |
| Full-screen drawing window | | | | ● | ● | ● |
| Movable (M)/hidable (H) palettes | | | | M, H | M, H | H |
| Number of windows open at once | 1 | disk space | 1 | 4 | disk space | 10 |
| Number of documents open at once | 1 | scrapbook | 1 | 4 | 1 | 10 |
| Scroll bars | | ● | ● | ● | ● | ● |
| Selection tools autoscroll | | | marquee, lasso selections | marquee | | ● |
| Autoscrolling tools | | | line and shape tools | FatBits | panels and easels only | all |
| Levels of magnification | 1 | 1 | 3 | 1 | 3 | 3 |
| Reduced view of page | ● | | live and adjacent | ● | ●[4] | ●[5] |
| Positioning on page | ● | | ● | ● | ● | |
| Select entire document | | | ● | ● | ● | ● |
| **Drawing Features** | | | | | | |
| Object-oriented drawing | | | | | | ● |
| Layers | | | | | ● | 2 |
| Editable brush shapes | | | ● | ● | ● | ● |
| Paint bucket fills off-screen | ● | ● | ● | | ● | ● |
| Arc | | | | | | ● |
| Draw shapes from center | | | | | | ● |
| Line-angle constraint | 45°, 90° | 45°, 90° | 45°, 90° | 45°, 90° | 45°, 90° | 30°, 45°, 60°, 90° |
| Special effects[6] | | | | ● | | [7] |
| Trace edges | ● | | ● | ● | ● | |
| Adjustable spray (area, density) | | | | | ● | |
| Grid | ● | | | ● | adjustable | [7] |
| Rulers, readouts | | | | ● | | [7] |
| Transparent drawing | ● | ● | | ● | ● | ● |
| **Text** | | | | | | |
| Custom font-size selection | | | | ● | | [7] |
| No white rectangle surrounding text | | ● | ● | ● | bit map only | paint or draw |
| White text on black background | | | ● | ● | | draw |
| Text wraps in block | | | | | ● | draw |
| Autoscrolling text | | | [8] | | | draw |
| Mix fonts, styles, sizes in block | | | | | ● | |
| Return to text block and edit | | | | | ● | draw |
| Type text with fill pattern | | | | | | ● |
| **Printing** | | | | | | |
| ImageWriter scaling | | n/a | ● | ● | ● | ● |
| LaserWriter scaling | | n/a | ● | ● | ● | ● |
| Laser fonts | | n/a | | | ● | ● |
| Gray-scale patterns | | n/a | | | | ● |
| 300-dpi editing | | n/a | | ● | | ● |
| Make posters | | n/a | ● | | ● | |
| 4-fold card printing | | n/a | ● | | ● | |
| Color printing | | n/a | ● | ● | | [7] |

[1] MacBanner – 51K.
[2] LaserPrint – 23K and ColorPrint – 62K.
[3] PosterMaker – 34K.
[4] Shows active, adjacent full-page view or inactive, reduced view of 2 adjacent pages.
[5] Shows adjacent but partial page only.
[6] Includes distort, skew, 1° rotations, perspective.
[7] Manufacturer promises these features for version 1.0 (except readouts).
[8] Text goes off edge of screen.

● A bullet indicates that a program does have the feature in question; a space means it doesn't.

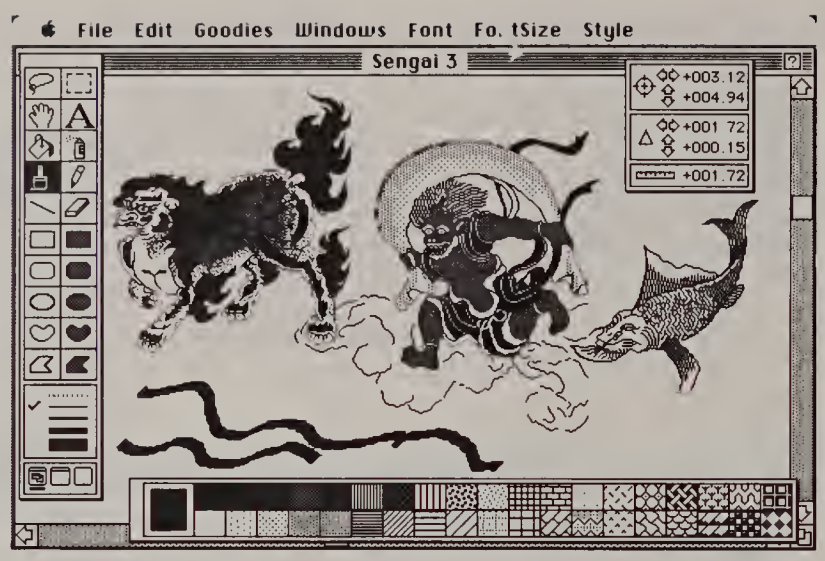



***Figure 3***
FullPaint *looks nearly identical to* MacPaint. *The menu bar and the tool and pattern palettes can be hidden to increase the drawing area. The small box in the upper-right corner of the window shows cursor position and the horizontal, vertical, and diagonal measurements of the object being drawn.*

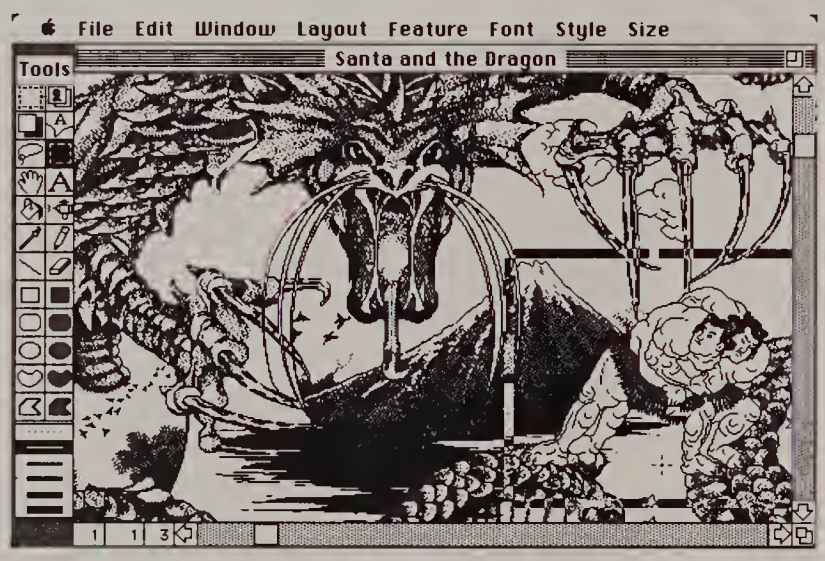



***Figure 4***
GraphicWorks *lets you edit and change superimposed bit maps. The two cowering figures in the foreground are contained in their own easel (indicated by the dark surrounding rectangle). The figures can be edited within the easel, or the easel itself can be moved relative to the background. For example, the figures could be placed behind Mt. Fuji instead of in the foreground.*

for creating color separations called ColorPrint has been added. The only remaining deficiencies are minor.

*FullPaint* is the best choice if you want a program that looks and feels like *MacPaint* while significantly improving on *MacPaint*'s features. But if it's features you cherish, move on to the two heavyweights: *GraphicWorks* and *SuperPaint*.

### GraphicWorks

What's in a name? *GraphicWorks* and *ComicWorks* (see *Macware Reviews,* September 1986) are two names sharing the same program. The products vary only in the templates that come packaged with them. If it were only a matter of idiosyncratic marketing, this software schizophrenia wouldn't be so interesting. As it turns out, the identity crisis actually reflects something telling about the nature of the program. To understand this you have to take a closer look.

Like CheapPaint, *GraphicWorks* has you draw in windows called easels. Specialized windows called balloons are used for text. Easels and balloons fit into background canvases called panels—another type of window. You can reposition and layer windows and choose whether they are transparent or opaque. The big advantage of this design is that it avoids the usual homogeneous bit map and preserves text, backgrounds, characters, and other images for future editing (see Figure 4). You can also crop and clip easels for a better fit. For example, an artist could use *GraphicWorks* to dummy an ad showing people in a landscape, both partially overlaid with type. The artist could change the size, font, and style of the ad copy and the relationship between the people and the landscape without eradicating superimposed elements.

The disadvantage of this complex system of windows is that it makes the program somewhat difficult to learn. One of the reasons *MacPaint* sold so many Macs was the ease with which someone could begin drawing pictures. Even after you learn how to jockey panels, easels, and balloons skillfully, handling so many windows is always going to be more cumbersome than the fluid approach of the other paint programs.

However, with *GraphicWorks* more than with most programs, it's a mistake to consider the program apart from its applications. The program's text and layering capabilities make it the best choice for storyboards, comics, and stage design. This explains the name dilemma. The program's strengths as a paint program are best characterized by the requirements of an application like comic book layout. But *GraphicWorks*'s mix of features also lends itself to applications that frequently combine text and graphics on the same page, such as desktop publishing, advertising, and poster design. You can mix fonts, styles, and sizes and wrap text to fit a variety of balloon shapes. More important, you can return to a block of text at any time to edit it, unlike the bit-mapped text blocks of other graphics programs.

The program has several bit magnification levels, and a Show Pages command displays a reduced view of opposing pages; a drawing can straddle both pages. This command helps solve a major deficiency that plagues all other paint programs: the lack of a landscape drawing area. ThinBits lets you use all tools and commands in a reduced page size. Another nice feature is the airbrush, a tool that is like the spray can but lets you control the spray's density and width.

As a desktop publishing program, *GraphicWorks* does have an Achilles' heel: laser printing. Although the program prints laser fonts at full resolution, printing complex documents that mix bit maps and text is time-consuming. If you want to take advantage of the LaserWriter, you're better off with *SuperPaint*.

Many graphic artists and desktop publishers will favor *GraphicWorks* for its powerful collection of features. However, the abundance of features in itself doesn't necessarily make *GraphicWorks* an ideal paint program. Drawing fluidity is equally important. The best way to find out which side of the issue you sit on is to test-drive *GraphicWorks* against a program like *FullPaint* or *SuperPaint*.

### SuperPaint

In the shoot-out to determine the best electronic easel, the newest program is the quickest on the draw. *SuperPaint* is an integrated graphics program with two layers: a powerful paint layer and an object-

oriented drawing layer (see *Reviews, Macworld,* November 1986). This combination helps overcome the inherent weaknesses of paint programs.

*SuperPaint*'s paint features are superior to those of *FullPaint*. Although both have full-screen drawing areas, multiple open documents, scroll bars, and a number of other shared improvements over *MacPaint,* all *SuperPaint*'s painting and selection tools autoscroll, and you can fill shapes that continue off screen with the paint bucket. These features make it much easier to create pictures larger than the Mac's screen. *SuperPaint* also provides three levels of bit magnification and has superior text editing and laser printing capabilities. The program's most serious limitation is the absence of a full-page view for positioning artwork relative to the page as a whole.

Of all the paint programs, *SuperPaint* has the best laser printing capabilities. The program has 32 gray-scale patterns that take full advantage of the LaserWriter's 3 percent gray-scale increments. Text can be printed in laser fonts as well as wrapped to fit resizable rectangular boxes. Unlike *GraphicWorks, SuperPaint* doesn't let you mix different fonts, styles, and sizes within the same text box, making *GraphicWorks* better for an application such as dummying an ad layout. As in *GraphicWorks,* however, you can return to a text block created in the draw layer and re-edit it. A feature called LaserBits lets you edit enlarged bit maps in the drawing layer at 300 dots per inch and then reduce them for printing on the LaserWriter (see Figure 5). Although this feature is similar to *FullPaint*'s LaserPrint utility, LaserBits is better because you don't have to quit the main application. This is much less cumbersome, and it lets you edit the high-resolution bit map while the background document remains in view.

*SuperPaint*'s draw layer does a commendable job of augmenting the program's paint capabilities by letting you create rectangles, ovals, arcs, polygons, and lines that can be reshaped, grouped, filled, and moved. The draw layer is not as powerful as *MacDraw* or *MacDraft* because it lacks design-oriented features that help architects and engineers scale and measure drawings and work with multiple-page layouts. But this is a moot point, since *SuperPaint*'s drawing capabilities are not meant for CAD applications. My only criticisms are that a couple of drawing features could have been better implemented to work with the program's paint layer. For example, the free-form drawing tool should ideally work like *MacDraft*'s, in which handles are interspersed along the line (see "Drafting's New Compass," *Macworld,* January 1986). This would make it easier to trace bit maps imported from the paint layer.

Overall, the two layers work well together. You can hide the background layer or let it show through to create a superimposition. You can also select a section of the superimposed layers for composite copy and paste operations. Copying bit maps to the draw layer turns the bit maps into objects. Using this technique, you can deal with superimposed bit maps almost as well as *GraphicWorks* does (although *GraphicWorks* is better for demanding applications of this type), but *SuperPaint*'s program design is much simpler. If you want to reedit the objects as bit maps, you can recopy them to the paint layer.

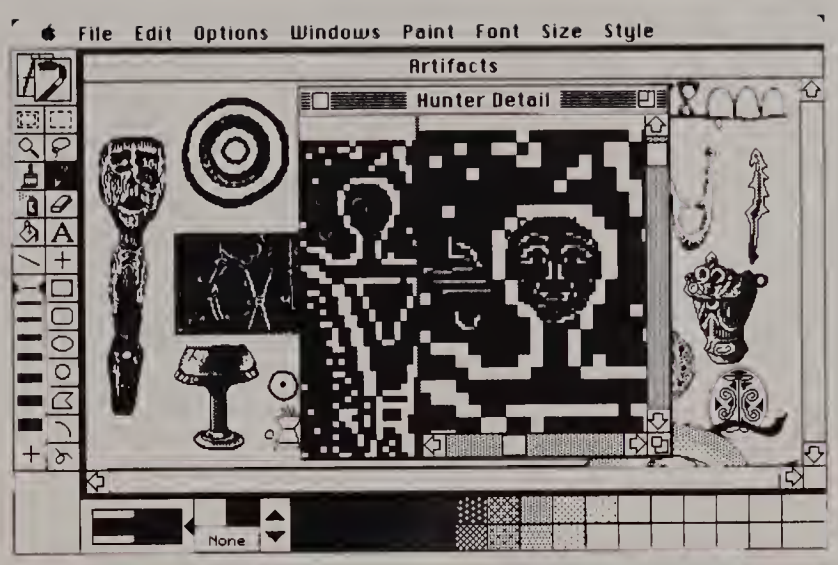


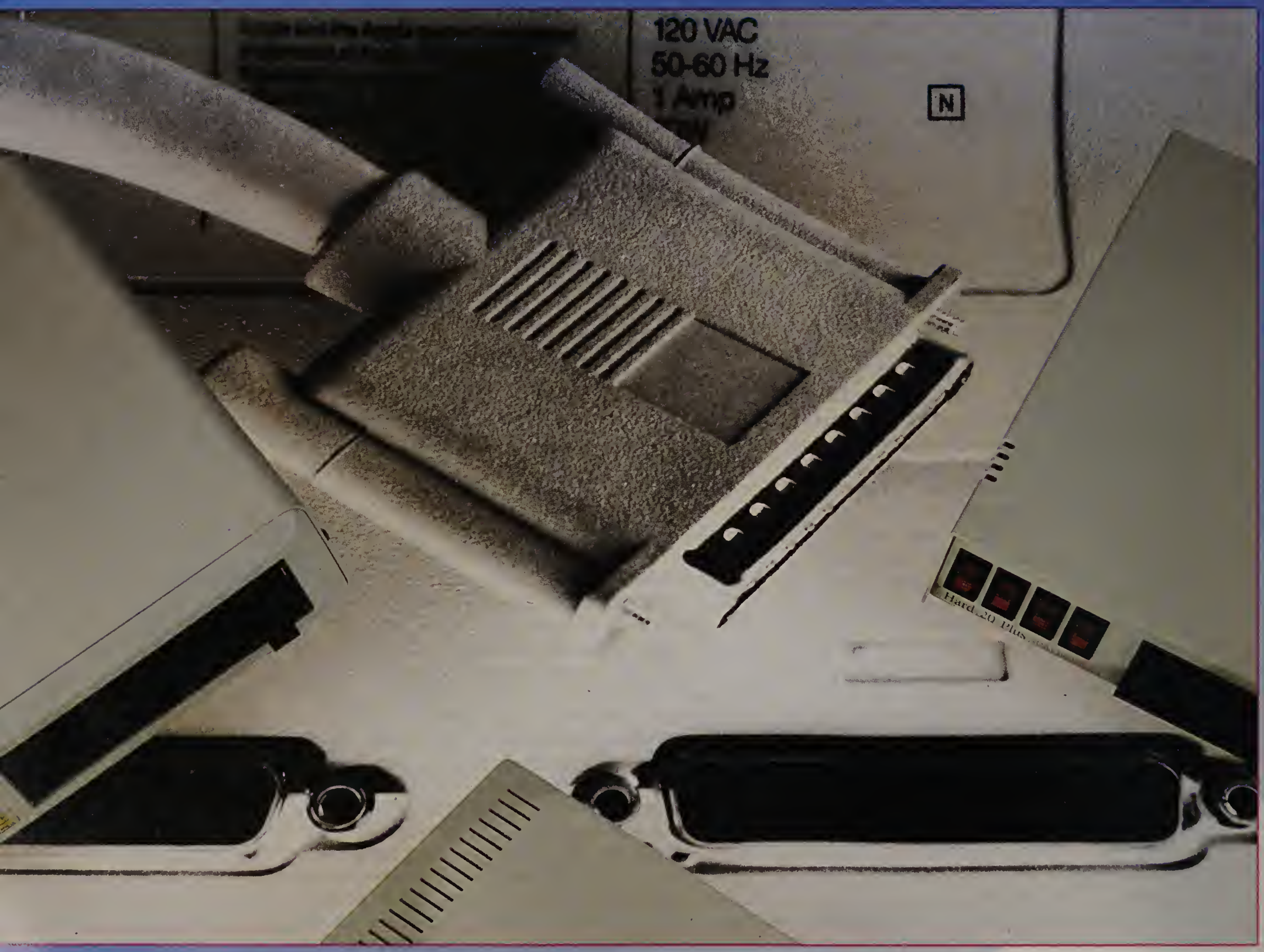

***Figure 5***
SuperPaint *lets you edit bit maps for printing at 300 dots per inch on the LaserWriter. In this example a detail from the small mural on the left has been selected for editing, creating an auxiliary document seen in the window titled "Hunter Detail." A detail of this document is magnified in the right half of the window, where you can see evidence of the detailed editing.*

### Making a Choice

*SuperPaint* is the best paint program available on the Macintosh today for all but a few applications. The program's object-oriented drawing and laser printing capabilities make it nearly irresistible. It's an excellent choice for new Mac owners who want to buy a single graphics program but also want the benefits of both paint and draw programs. For example, people who purchase integrated productivity packages such as *Jazz, Microsoft Works,* or *Ragtime* will find an excellent general-purpose graphics tool in *SuperPaint.*

As far as the other paint programs go, at the low end CheapPaint is for unrepentant desk accessory junkies, and *MacPaint* is an outdated classic. *MacBillboard* is only for shareware aficionados or penny-pinchers. The real choice is at the high end among *FullPaint, GraphicWorks,* and *SuperPaint.* Of the three programs, *FullPaint* is the weakest on features but should be considered by people who place an exceptionally high value on simplicity or want to upgrade to a program with a look and feel almost identical to *MacPaint*'s. *GraphicWorks* falls on the other side of the simplicity-versus-features equation. Desktop publishers, comic book artists, and storyboard artists should seriously consider *GraphicWorks* for its powerful text editor, opposing show pages, and flexibility with superimposed bit maps. *GraphicWorks* may be the best choice if you don't mind the program's complex layering system and if you won't miss *SuperPaint*'s full-blown laser printing and shape editing capabilities. Overall, *SuperPaint* represents the best compromise between flexibility and power. It's the clear winner and, as far as I'm concerned, *MacPaint*'s heir apparent. □

See *Where to Buy* for product details.




PHOTOGRAPHS BY FRED STIMSON

# Shopping for SCSI Storage

*A guide to selecting a SCSI hard disk and tape drive*

***by Rick LePage***

When Apple added the Small Computer Systems Interface (SCSI) port to the Macintosh Plus, it opened the door to a flood of high-performance peripherals. In the pre-SCSI days, disk drives were scarce and slow, and tape drives were nonexistent. Nowadays, hard disks and tape drives are easy to come by, and you can add up to seven drives without tying up the Mac's modem and printer ports.

But while SCSI storage products for the Mac have become plentiful, selecting a drive from the crowd can be a bit confusing.

What follows are some guidelines to keep in mind when shopping for SCSI storage. Factors like addressing, expansion capabilities, servicing and support, the availability of cables, and above all, stable driver software will play an important part in your decision. Because different options are appropriate for different situations, you should first determine your needs and then select the features you can't do without (see "Hard Drives Compared").

### Changing Addresses

You can daisy-chain up to seven devices to the Mac's SCSI port. Generally, it won't matter which device is first or last, but each unit must have a unique address that the Mac can recognize. If you don't plan to connect more than one SCSI device to the Mac, then addressing is not really a concern. But once you add another SCSI device, you will need to check the address of each drive.

The device address, a number from 0 to 6, is usually changeable on the drive's controller. Iomega's Bernoulli Box has a switch in the back that allows you to easily change the address. Other devices let you change the address by opening the drive and moving a few jumper pins. For example, the MacBottom SCSI, from Personal Computer Peripherals Corporation, has a removable vent that enables you to access the jumpers without having to take apart the entire drive. Generally, changing addresses is a simple task, but you should be aware of the different ways in which various drives handle the address options.

Because most hard drives are configured for address 0, if you wanted to add a second drive, you (or your dealer) would probably have to change the drive's address. One final point about addressing: the Mac will start up from the device with the highest SCSI address, so if you're using multiple hard drives, the one with the highest address will be the start-up drive.

### Satisfaction Guaranteed

Most SCSI devices come ready to plug in and use, with at least a 90-day warranty on parts and labor. There's always a chance that something might go wrong, so make sure you understand the manufacturer's warranty procedures and policies. If you buy from a mail-order house or directly from the vendor, ask a few questions first: Are you guaranteed that the drive will be repaired within a certain time? Will the dealer service the drive, or must you mail it back to the manufacturer? Who will pay for shipping and handling?

### Chaining Drives

Some manufacturers supply all the cables necessary for hooking up the drive, while others don't, so make sure you get all the cables when you pick up your unit. What type of connector is on the end of the drive? Some drives require the 50-pin Ampherol con-

***MDIdeas TDBK-20+***
*The TDBK-20+ tape drive can daisy-chain to any SCSI hard disk. The drive makes an image backup to a tape cassette.*

nector, while others use a 25-pin RS-232C type. Consequently, you might need an adapter cable to switch from one type to another.

Termination is another factor to consider. The SCSI specification calls for a terminator before the first and last drive in the chain. While most drives come with internal terminators, some require you to attach a terminator block in line with the SCSI cable.

The length of the SCSI cable is also important, since most drive cables are so short that you must place the unit directly next to the Mac. Some of the newer drives come with 6-foot cables, making it easier to minimize noise and ventilation problems.

**Anatomy of a Disk Drive**

Hard disk drives are the most common SCSI devices available at present. With the increase in the number of drives has come a proliferation of storage sizes. You can now purchase drives in capacities from 20 to 160 megabytes and beyond, which should be more than adequate for most small-business needs.

SCSI drives essentially consist of two parts, the controller and the drive unit. With most of the early Mac SCSI drives, the two parts were made by separate manufacturers and combined by a third. More recent offerings incorporate an integrated drive and controller subsystem made by one manufacturer.

Integrating a controller and drive usually results in lower cost and higher performance. Rodime and Seagate currently supply integrated controllers and drives to several Macintosh disk drive manufacturers. The Seagate 225N drive offers a sophisticated real-time diagnostic test that attempts to read and remap bad blocks on the disk surface without the user's intervention.

**Boosting Performance**

When they were announced, SCSI hard disks were touted for their speed—SCSI transfers data at 320K per second, over ten times faster than the serial ports. However, even though the drives themselves are fast—the average access time, the time it takes for the disk to position the read/write head, ranges from 20 to 65 milliseconds—most drives transfer data faster than the Mac's CPU can process it. Until someone introduces a faster CPU or a disk controller capable of writing directly to memory, the performance differences between most drives will be minimal.

In spite of the CPU bottleneck, several manufacturers, most notably Micah and SuperMac Technology, have optimized performance by either modifying the drive's controller software or the SCSI Manager software in the Mac's ROM. SuperMac Technology took the latter approach with its DataFrame XP series, which it claims is up to twice as fast as competing drives. The DataFrame XP requires that a small circuit board be mounted in the Mac Plus's ROM socket; then the Mac's ROM is inserted in the board. Although SuperMac modifies the data format to improve performance, the drive is still SCSI compatible—other SCSI drives should operate with the modified Mac, but they won't exhibit the increased speed.

**Utility Software**

You should also consider what type of software comes with the drive. All manufacturers provide a disk format utility, but not all include software to run diagnostic tests on the drive. If you are not purchasing a tape drive, find out if the hard disk comes with software to back up the data onto floppy disks. Furthermore, you should look for software that lets you back up the entire disk (image backup), selected files or folders, or only files that have been updated (incremental backup).

Other types of bundled software include print spoolers and networking software. Some manufacturers, such as General Computer and Micah, include disk management and utility software.

***SuperMac's DataFrame 40 XP***
*The 40 XP uses a modified form of the SCSI data format, which SuperMac claims can double disk performance speed. To take advantage of the performance boost, you must install a board in the Mac's ROM socket.*

***ProApp 20***
*The ProApp 20 works with the Apple IIe and IIc and the 128K and 512K Mac (via the floppy port) or the Macintosh Plus (via the SCSI port). You can create separate partitions for Apple II and Mac files.*

### Noise and Portability

In a quiet room, noise can be a problem. If you're concerned about it, listen to your top contenders as they run. Although drives without fans run more quietly, most of them get hotter. A drive without a fan won't necessarily burn out, as long as it's vented correctly and the air flow isn't blocked by other equipment.

Portability is also an important consideration. Some drives are easy to carry, which is nice when you have one Mac at home and another at the office. Larger-capacity drives and combined tape-and-hard-disk drives are not well suited for frequent transporting. If you need a portable drive, look for one with either an automatic or software head-parking option, which retracts the heads from the drive surface when not in use. A parking option ensures that the head won't scratch the disk surface if the drive is jostled, which would wipe out your data.

### A Backup a Day

Although most computer users are dutifully drilled on the necessity of backing up data, few do it regularly. Often this is because copying data from one disk to another can be time-consuming, especially when you're copying to floppy disks. But with the right software, a tape drive can save you time and money and increase your efficiency as well.

Tape drives for the Mac are currently available in 20-, 40-, and 60-megabyte ranges and are either stand-alone units or combined with hard disks (see "Tape Drives Compared"). The smaller-capacity drives usually save the data on a cassette tape, while the higher-capacity units generally use a larger cartridge. Cassettes are usually cheaper than cartridges, though the two are fairly close in price. As with hard disk drives, the differences in tape-drive speeds can be inconsequential.

Another alternative to the backup dilemma is a disk drive like the Bernoulli Box, the Univation Slimline series, or the Amcodyne PhD; all have removable cartridges that you can use to back up essential data.

### Backup Software

When evaluating a tape drive, you should check to see if the software allows image backups, selective backups, and incremental backups. Also find out whether you can restore individual files from the tape.

Those with large-capacity hard drives should see how the tape drive handles backups when the disk's capacity exceeds that of the tape. Does the software prompt you for another tape, or are you limited to one?

Getting into the habit of backing up regularly is easier with well-designed incremental backup software. You can also use it to maintain a log of the backups for reference when a problem arises. Another convenient feature to look for is the capability of listing a tape's contents. And Mirror Technologies and Peak Systems both offer automatic backup, an ideal way to maintain network servers or heavily used disks. A boon to forgetful users, this feature will back up a disk at a preassigned time, whether or not you're there.

### All in One

Finally, you must decide whether you want a SCSI device that combines a hard disk with a tape drive (see "Combination Drives Compared"). The advantages of a combined disk-and-tape unit are low cost and functionality. In a combined unit, the disk and tape are designed to work together with a minimum of hassles. The combination drive should have software that makes it easy to back up to tape. Some drives (like the AST-2000) even have software that lets you use the tape drive like a disk. However, you should be aware that some combined tape drives cannot back up other SCSI disks.

***Relax Technology's Hard 20 Plus***
*The Hard 20 Plus incorporates the Seagate 225N drive and contains four switched power outlets with noise filtering and surge suppression.*

*(continues)*

# Hard Drives Compared

| Drive | Capacity | Price | Cables | Warranty | Ports | SCSI Addressing | Backup Software | Software Spooler | Utility |
|---|---|---|---|---|---|---|---|---|---|
| **Amcodyne** | | | **no** | **1 year** | **1** | **jumper** | **no** | **no** | **no** |
| PhD | 100MB | $6995 | | | | | | | |
| **Apple Computer** | | | **no** | **3 months[1]** | **2** | **external switch** | **no** | **no** | **a, b** |
| Hard Disk 20SC | 19MB | $1299 | | | | | | | |
| **CMC Computer Systems** | | | **yes** | **90 days[2]** | **2** | **DIP switch** | **no** | **no** | **c** |
| HardMac + 20 | 20MB | $795 | | | | | | | |
| HardMac + 30 | 30MB | $1095 | | | | | | | |
| HardMac + 40 | 40MB | $1295 | | | | | | | |
| **DC Systems** | | | **yes** | **1 year** | **2** | **jumper** | **no** | **no** | **c, d** |
| Easy Drive 20 | 21MB | $995 | | | | | | | |
| Easy Drive 30 | 31MB | $1495 | | | | | | | |
| Easy Drive 40 | 40MB | $1695 | | | | | | | |
| **Ehman Engineering** | | | **yes** | **1 year** | **1** | **external switch** | **yes** | **no** | **e** |
| HDD-20 | 21MB | $1295 | | | | | | | |
| **General Computer** | | | **yes** | **90 days** | **2** | **software** | **yes** | **yes[3]** | **c, d, f** |
| HyperDrive FX-20 | 21MB | $1199 | | | | | | | |
| **Iomega** | | | **no** | **90 days** | **2** | **rotary switch** | **yes** | **no** | **c** |
| Bernoulli Box 10 | 10MB | $1795 | | | | | | | |
| Bernoulli Box 10 + 10 | 20MB | $2695 | | | | | | | |
| Bernoulli Box 20 | 20MB | $2395 | | | | | | | |
| Bernoulli Box 20 + 20 | 40MB | $3495 | | | | | | | |
| **Jasmine Computer Systems** | | | **yes** | **1 year** | **1** | **external switch** | **yes** | **yes[3]** | **g, d** |
| Direct Drive 20 | 20MB | $599 | | | | | | | |
| Direct Drive 80 | 80MB | $1380 | | | | | | | |
| **Kamerman Labs** | | | **yes** | **[4]** | **2** | **internal switch** | **no** | **no** | **e, d** |
| Cirrus 21D | 20MB | [4] | | | | | | | |
| **LoDown** | | | **yes** | **3 months[5]** | **2** | **jumper** | **no** | **no** | **no[6]** |
| LoDown-20 | 21MB | $995 | | | | | | | |
| LoDown-30 | 31MB | $1295 | | | | | | | |
| LoDown-40 | 40MB | $1995 | | | | | | | |
| LoDown-60 | 60MB | $2495 | | | | | | | |
| LoDown-80 | 80MB | $3995 | | | | | | | |
| **MDIdeas** | | | **yes** | **1 year** | **2** | **jumper** | **yes** | **no** | **c, d** |
| HD-20 | 21MB | $1095 | | | | | | | |
| HD-30 | 31MB | $1595 | | | | | | | |
| **Micah** | | | **yes** | **1 year** | **2** | **jumper** | **yes** | **yes[3]** | **yes** |
| 30 XT | 31MB | $1395 | | | | | | | |

[1] AppleCare service for up to 3 years available for additional fee.
[2] CMC will extend the warranty for 1 year for $50.
[3] Includes spoolers for ImageWriter and LaserWriter.
[4] To be announced.
[5] Extended warranty (to 18 months) for 12% of purchase price.
[6] Includes 300 public domain programs.

a = file search
b = file recovery
c = diagnostics
d = parks heads
e = partitioning
f = security
g = mount volume
h = format

| Drive | Capacity | Price | Cables | Warranty | Ports | SCSI Addressing | Backup Software | Software Spooler | Utility |
|---|---|---|---|---|---|---|---|---|---|
| **Mirror Technologies** | | | **no** | **1 year** | **2** | **jumper** | **no** | **no** | **no**[7] |
| MagNet 20X | 21MB | $1095 | | | | | | | |
| MagNet 30X | 31MB | $1195 | | | | | | | |
| MagNet 85X | 85MB | $5295 | | | | | | | |
| MagNet 172X | 172MB | $6495 | | | | | | | |
| **Palo Alto MicroSystems** | | | **yes** | **1 year** | **2** | **jumper** | **yes** | **no** | **no** |
| WhisperDrive | 21MB | $789 | | | | | | | |
| **Peachtree Technology** | | | **yes** | **1 year** | **2** | **jumper** | **no** | **no** | **no** |
| S-20 + | 21MB | $1399 | | | | | | | |
| **Peak Systems** | | | **yes** | **1 year** | **2** | **jumper** | **yes** | **yes** | **b, c, d** |
| Plus-20 | 21MB | $1095 | | | | | | | |
| Plus-30 | 31MB | $1395 | | | | | | | |
| Plus-45 | 45MB | $1895 | | | | | | | |
| Plus-65 | 65MB | $2495 | | | | | | | |
| **Peripheral Land** | | | **yes** | **1 year** | **2** | **jumper** | **yes** | **no** | **d, e** |
| PL 20 | 21MB | $995 | | | | | | | |
| PL 30 | 32MB | $1395 | | | | | | | |
| PL 50 | 50MB | $1995 | | | | | | | |
| PL 80 | 70MB | $2495 | | | | | | | |
| PL 172 | 150MB | $5995 | | | | | | | |
| MacStore 10 Removable | 10MB | $1995 | | | | | | | |
| MacFast 20[8] | 20MB | $1395 | | | | | | | |
| MacFast 30[8] | 30MB | $1695 | | | | | | | |
| MacFast 80[8] | 80MB | $2995 | | | | | | | |
| **Personal Computer Peripherals Corp.** | | | **yes** | **1 year** | **2** | **jumper** | **yes** | **yes** | **no** |
| MacBottom SCSI | 21MB | $1195 | | | | | | | |
| **ProApp** | | | **yes** | **1 year** | **1** | **DIP switch** | **yes** | **no** | **c, d** |
| ProApp 10[9] | 11MB | $795 | | | | | | | |
| ProApp 20[9] | 21MB | $995 | | | | | | | |
| ProApp 40S | 40MB | $1995 | | | | | | | |
| **Rabbit Industries** | | | **yes** | **1 year** | **2** | **DIP switch** | **yes** | **yes** | **no** |
| Magic20 | 21MB | $699 | | | | | | | |
| Magic30 | 31MB | $899 | | | | | | | |
| Magic65 | 65MB | $1399 | | | | | | | |
| Magic235 | 235MB | $3399 | | | | | | | |
| **Relax Technology** | | | **yes** | **4 months** | **2** | **jumper** | **yes** | **no** | **g** |
| MacMate 20[10] | 21MB | $995 | | | | | | | |
| Hard 20 Plus | 21MB | $1095 | | | | | | | |

[7] *MacServe* network software available for $100.
[8] Includes a non-SCSI tape-drive port.
[9] Connects to Apple II line.
[10] Includes switched outlets with surge protection.

a = file search
b = file recovery
c = diagnostics
d = parks heads
e = partitioning
f = security
g = mount volume
h = format

# Hard Drives Compared

| Drive | Capacity | Price | Cables | Warranty | Ports | SCSI Addressing | Backup Software | Software Spooler | Utility |
|---|---|---|---|---|---|---|---|---|---|
| **Softworks, Ltd.** | | | **yes** | **1 year** | **2** | **jumper** | **no** | **no** | **c** |
| SD-11 | 11MB | $599 | | | | | | | |
| SD-22 | 22MB | $850 | | | | | | | |
| SD-30 | 30MB | $949 | | | | | | | |
| SD-60 | 60MB | $1495 | | | | | | | |
| SD-105 | 105MB | $2995 | | | | | | | |
| SD-140 | 140MB | $3495 | | | | | | | |
| SD-170 | 170MB | $3995 | | | | | | | |
| **Spectra Micro Development** | | | **yes** | **1 year** | **2** | **jumper** | **no** | **no** | **no** |
| Spectra Hard Disk 20 | 21MB | $795 | | | | | | | |
| **Sunol Systems** | | | **yes** | **6 months[11]** | **1** | **n/a** | **yes** | **no** | **c, d** |
| SunStreak SCSI-21 | 21MB | $1295 | | | | | | | |
| SunStreak SCSI-30 | 30MB | $1695 | | | | | | | |
| SunStreak SCSI-45 | 45MB | $2795 | | | | | | | |
| SunStreak SCSI-70 | 70MB | $3795 | | | | | | | |
| SunStreak SCSI-110 | 110MB | $5295 | | | | | | | |
| SunStreak SCSI-180 | 180MB | $7995 | | | | | | | |
| **SuperMac Technology** | | | **no** | **1 year** | **2** | **jumper** | **yes** | **yes** | **no** |
| DataFrame 20 | 21MB | $1099 | | | | | | | |
| DataFrame 40 | 41MB | $1799 | | | | | | | |
| DataFrame 20 XP[12,13] | 21MB | $1299 | | | | | | | |
| DataFrame 40 XP[12,13] | 41MB | $1999 | | | | | | | |
| **Supra Corp.** | | | **yes** | **90 days** | **2** | **jumper** | **no** | **no** | **c** |
| SupraDrive 20 | 21MB | $799 | | | | | | | |
| SupraDrive 30 | 31MB | $995 | | | | | | | |
| SupraDrive 60 | 60MB | $1995 | | | | | | | |
| **Trimar USA** | | | **yes** | **1 year** | **2** | **jumper** | **yes** | **no** | **no** |
| Generic Drive 20 | 21MB | $850 | | | | | | | |
| **Univation** | | | **yes** | **1 year** | **1** | **jumper** | **yes** | **no** | **no** |
| AS10R | 10MB | $2195 | | | | | | | |
| AS20F | 20MB | $1695 | | | | | | | |
| AS30F | 30MB | $1895 | | | | | | | |
| AS40F | 40MB | $2695 | | | | | | | |
| AS1010-2R | 20MB | $3495 | | | | | | | |
| AS2010R | 30MB | $2995 | | | | | | | |
| AS3010R | 40MB | $3295 | | | | | | | |
| AS4010R | 50MB | $3995 | | | | | | | |
| **Warp Nine** | | | **no** | **90 days[14]** | **2** | **jumper** | **no** | **no** | **h** |
| Photon 20 | 20MB | $695 | | | | | | | |
| Photon 30 | 30MB | $795 | | | | | | | |

[11] Extended warranty (to 18 months) for 14% of retail price.
[12] Requires Mac Plus modification.
[13] Proprietary code speeds data-transfer rate.
[14] One-year extended warranty available for additional fee.

a = file search
b = file recovery
c = diagnostics
d = parks heads
e = partitioning
f = security
g = mount volume
h = format

# Tape Drives Compared

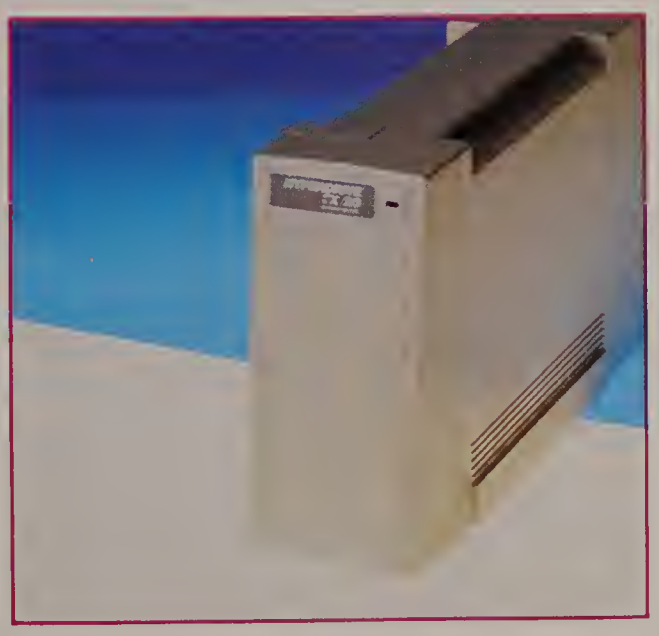
| Manufacturer/Drive | Capacity | Price | Type | Cables | Warranty | Backup Types |
|---|---|---|---|---|---|---|
| **Kamerman Labs** | | | | | | |
| 40T | 40MB | [1] | cassette | yes | [1] | mirror-image, file-by-file |
| **LoDown** | | | | | | |
| LoDown-T20 | 22MB | $895 | cassette | yes | 3 months[2] | mirror-image, file-by-file, incremental |
| LoDown-T50 | 50MB | $1295 | cassette | yes | 3 months[2] | mirror-image, file-by-file, incremental |
| **MDIdeas** | | | | | | |
| TDBK-20 + | 22MB | $1095 | cassette | yes | 1 year | mirror-image, file-by-file, incremental |
| TDBK-45 | 45MB | $1295 | cassette | yes | 1 year | mirror-image, file-by-file, incremental |
| **Micah** | | | | | | |
| TB 40/60 | 60MB | $1495 | cassette | yes | 1 year | mirror-image, file-by-file, incremental; includes utility that creates file catalog of tapes with backup information |
| **Mirror Technologies** | | | | | | |
| Magnum Tape 20 | 20MB | $1195 | cassette | no | 1 year | mirror-image, file-by-file, incremental |
| **Peak Systems** | | | | | | |
| Plus-20T | 20MB | $895 | cassette | yes | 1 year | mirror-image, file-by-file, timed backup |
| **Peripheral Land** | | | | | | |
| MacBack + 20 | 22MB | $995 | cassette | yes | 1 year | mirror-image, file-by-file, incremental |
| MacBack + 60 | 60MB | $1695 | cartridge | yes | 1 year | mirror-image, file-by-file, incremental |
| **Warp Nine** | | | | | | |
| Transporter 20 | 22MB | $895 | cassette | no | 3 months[3] | mirror-image, file-by-file, incremental |

[1] To be announced.

[2] LoDown offers extended warranty (to 18 months) for 12% of purchase price.

[3] 1-year extended warranty available for additional fee.

***General Computer's HyperDrive FX-20***
*The FX-20 marks General Computer's entrance into the external SCSI drive market. The case includes a built-in handle for transporting the drive.*



### In the Driver's Seat

The sheer proliferation of SCSI devices for the Mac guarantees that you'll find the drive made for you. If price is an object, then some of the less expensive units selling for under $1000 should suit you well. If flexibility and software are more important than a low price, consider drives from well-known manufacturers. If you already own a hard disk, you probably don't need a combination drive. But if you want the speed of a hard disk and the security of a tape drive, a combination unit could be the best alternative.

In the future you can expect to see optical disk drives, high-speed laser printers, scanners, and laboratory equipment slipping into the SCSI market, but right now the focus is on storage and backup drives. □

See *Where to Buy* for product details.

# Combination Drives Compared

| Manufacturer/Drive | Capacity: Disk | Tape | Price | Cables | Warranty | Tape Type | Ports | SCSI Addressing | Spooler |
|---|---|---|---|---|---|---|---|---|---|
| **AST Research** | | | | **yes** | **6 months** | | **2** | **no[1]** | **no** |
| AST-2000 | 20MB | 20MB | $2795 | | | minicartridge | | | |
| AST-4000 | 74MB | 60MB | $6995 | | | cartridge | | | |
| **LoDown** | | | | **yes** | **3 months[2]** | **cassette** | **2** | **no[1]** | **no** |
| Combo 20/20 | 20MB | 20MB | $1795 | | | | | | |
| Combo 20/50 | 20MB | 50MB | $2195 | | | | | | |
| Combo 30/20 | 30MB | 20MB | $2095 | | | | | | |
| Combo 30/50 | 30MB | 50MB | $2495 | | | | | | |
| **MDIdeas** | | | | **yes** | **1 year** | **cassette** | **2** | **jumper** | **no** |
| HDT-30/40 | 30MB | 40MB | $2995 | | | | | | |
| **Micah** | | | | **yes** | **1 year** | **cassette** | **2** | **jumper** | **no** |
| 60XT | 65MB | 60MB | $4495 | | | | | | |
| **Mirror Technologies** | | | | **no** | **1 year** | **cartridge** | **2** | **software** | **yes** |
| MagNet 40/40 | 40MB | 40MB | $3195 | | | | | | |
| MagNet 85X | 68MB | 40MB | $5295 | | | | | | |
| MagNet 172X | 146MB | 40MB | $6495 | | | | | | |
| **Peak Systems** | | | | **yes** | **1 year** | **cartridge** | **2** | **jumper** | **no** |
| Sierra 20/40 | 21MB | 40MB | $2495 | | | | | | |
| Sierra 30/40 | 31MB | 40MB | $2695 | | | | | | |
| **Univation** | | | | **yes** | **1 year** | **cassette** | **1** | **jumper** | **no** |
| AS1010T | 10MB | 20MB | $3495 | | | | | | |
| AS2010T | 20MB | 20MB | $2995 | | | | | | |
| AS3010T | 30MB | 20MB | $3295 | | | | | | |
| AS4010T | 40MB | 20MB | $3995 | | | | | | |
| AS2040T | 20MB | 40MB | $2995 | | | | | | |
| AS3040T | 30MB | 40MB | $3295 | | | | | | |
| AS4040T | 40MB | 40MB | $3995 | | | | | | |
| **Warp Nine** | | | | **no** | **3 months[3]** | **cassette** | **2** | **jumper** | **no** |
| Photon 2001 | 22MB | 22MB | $1495 | | | | | | |
| **Western Computer** | | | | **yes** | **1 year** | **cassette** | **2** | | |
| Big Mack Twin Pack | 21MB | 22MB | $1995 | | | | | DIP switches | yes |
| Big Mack Twin Pack Plus 40/40 | 40MB | 40MB | $2995 | | | | | jumper | no |

[1] AST recommends that you do not change the address of the base unit.

[2] LoDown offers extended warranty (to 18 months) for 12% of purchase price.

[3] 1 year extended warranty available for additional fee.

| Utility | Backup Options | Other |
|---|---|---|
| no | tape drive can function as a disk drive | |
| no | mirror-image, file-by-file | |
| no | mirror-image, file-by-file, folder-by-folder, incremental | |
| parks heads | mirror-image, file-by-file, incremental | |
| yes | mirror-image, file-by-file, incremental, with catalog features | fast data transfer rate; includes LaserWriter spooler |
| no | mirror-image, file-by-file, incremental | |
| recovery, parks heads | mirror-image, file-by-file, timed backup | |
| no | mirror-image, file-by-file | |
| | | guaranteed 48-hour turnaround time on repairs |
| yes | mirror-image, file-by-file, timed backup | |
| no | mirror-image, file-by-file, incremental | |

# New on the Desktop

*The gap between the Mac and dedicated publishing systems continues to narrow*

***by Jim Heid***

The first generation of desktop publishing programs was intended for relatively simple tasks such as turning out brochures and newsletters. But soon greater performance was demanded as users learned more about typography and layout, and corporate graphics departments sought quick type turnaround for more sophisticated projects like producing annual reports and display advertisements.

Response to these demands has come in the form of a new generation of software that includes *ReadySetGo* version 3.0, *PageMaker* version 2.0, *LetraPage* (formerly *MacPublisher*), *Ragtime,* and *Solo.* What follows is a preview of the capabilities and operating styles of these programs, together with a comprehensive table of statistics, to guide you in making the right buying decision (see "Feature-by-Feature Comparison").

**More and Better-Looking Text**

All the programs share the ability to create publications of expanded length. Combined with automatic page-numbering, this makes for easier handling of projects like manuals and books. Improved typographic control is another common characteristic; *PageMaker, ReadySetGo, LetraPage,* and *Solo* allow more precise control over type by offering both automatic and manual kerning.

*PageMaker, ReadySetGo,* and *LetraPage* also provide automatic hyphenation. End-of-line hyphenation can greatly enhance the appearance of justified (aligned left and right) text and, to a lesser extent, text with ragged right margins. There are two approaches to hyphenation.

*Algorithmic* hyphenation divides words according to the rules of spelling. One such rule states that when two consonants fall between two vowels, the word should be divided between the consonants. However, numerous exceptions can be found to this rule—for instance, the correct hyphenation for the word *program* is *pro-gram.*

A more accurate but slower way to hyphenate compares words against a dictionary linked to the program. *PageMaker* and *LetraPage* both provide dictionaries to which you can add words.

However, the best approach may be a combination of algorithmic and dictionary-based hyphenation. *ReadySetGo* 3.0 hyphenates according to the rules but also lets you add problematic words like *program* to an exception dictionary.

*Ragtime, ReadySetGo,* and *Solo* make it more practical to write and revise text within the program itself. *ReadySetGo* 3.0 provides a spelling checker, *Solo* has a

glossary for quick entry of frequently typed phrases, and all three include search-and-replace commands. Nevertheless, no publishing program can replace a sophisticated word processor like *Microsoft Word* for creating and editing large documents—a point acknowledged by most publishing programs in their import of formatted *Word* documents.

Finally, the new breed of Macintosh publishing programs is making it easier to create pages. *ReadySetGo* 3.0 and *LetraPage,* for instance, have greatly improved their what-you-see-is-what-you-get (WYSIWYG) page displays by providing more ways to view a page, the ability to edit text directly on the layout, and toolbox palettes for quick access to drawing tools and frequently used options.

**PageMaker**

The premier version of Aldus's *PageMaker* set the standard for ease of use. The program's *pasteboard* metaphor makes electronic layout similar to mechanical pasteup. After specifying a page's overall layout—its number of columns, dimensions, and horizontal or vertical orientation—you lay down text or graphics. When a section of text doesn't fit in a column, *PageMaker* enables you to make changes that automatically reflow surplus text elsewhere in the publication.

The latest version of the program builds on the same straightforward operating style of its predecessor. *PageMaker*

JEFFERY NEWBURY

2.0's most noteworthy improvements are its 128-page publication length (versus version 1.2's 16-page ceiling), tabloid page size, automatic and manual kerning, and automatic, dictionary-based hyphenation (see Figure 1). Other enhancements include minor fixes to on-screen rulers, the ability to change a publication's horizontal or vertical orientation after element positioning, and printing options that let you produce reversed pages and "mirror" images.

All in all, these improvements have made a good product even better; *PageMaker* excels at producing any publication that doesn't demand advanced text-manipulation features such as automatic footnotes, tables of contents, or indexes. According to Aldus, publications created with the new IBM PC version will be compatible with those made with the Mac version, and vice versa—a potentially valuable capability for offices with networks containing both PCs and Macs.

### Ragtime

Orange Micro's *Ragtime* has what integrated software on the Macintosh should have: a spreadsheet for crunching numbers, a capable word processor for editing text, and page-layout features that take advantage of the Mac's graphics and fonts (see Figure 2).

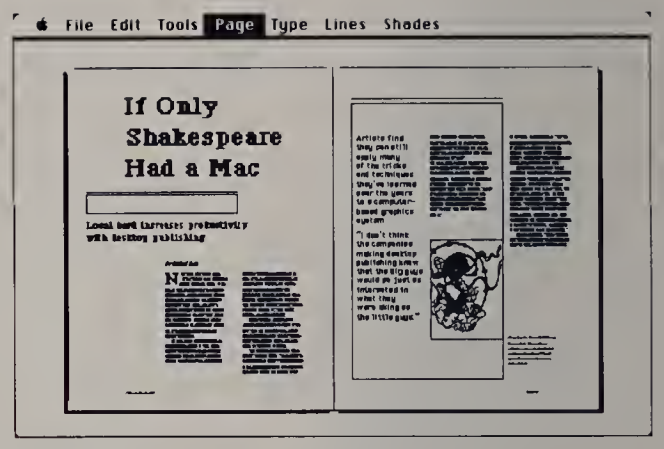



***Figure 1***
PageMaker *2.0 lets you view and alter two-page spreads in any of five magnification levels. The latest version of this publishing best-seller can also create documents of up to 128 pages, and it features automatic and manual kerning and dictionary-based hyphenation.*

## Feature-by-Feature Comparison

| | PageMaker 2.0 | ReadySetGo | LetraPage | Ragtime | Solo |
|---|---|---|---|---|---|
| **Publication Layout** | | | | | |
| Maximum document length (pages) | 128 | disk | disk | 350 | 35 (512K); 90 (1MB) |
| Maximum columns per page | unlimited | unlimited | 48 | unlimited | unlimited |
| Maximum page size (inches) | 17 by 22 | 17 by 22 | 17 by 22 | 11 sq. feet | 11 by 17 |
| Multiple open publications | | ● | | ● | ● |
| Column guides | ● | ● | ● | | ● |
| Preset page designs | | ● | | | |
| View and alter two-page spreads | ● | ● | ● | | ● |
| Number of view levels | 5 | 4 | 10 | 2 | 7 |
| On-screen rulers | ● | ● | ● | ● | ● |
| Automatic page numbering | ● | ● | ● | ● | ● |
| Table-of-contents generation | | | ● | | |
| Index generation | | | optional | | |
| Smallest positioning increment | 1 point | 1 point | 1 point | 1 point | 1 point |
| Group command for combining objects | | ● | ● | | ● |
| **Text Editing and Formatting** | | | | | |
| Edit text directly on layout | ● | ● | ● | ● | |
| Automatic reflow after editing | ● | ● | ● | ● | ● |
| Automatic footnoting | | | | | |
| Tabs | ● | ● | ● | ● | ● |
| Decimal tabs | ● | ● | | ● | ● |
| Search and replace | | ● | | ● | ● |
| Global font/style changes | | ● | | ● | ● |
| Spell checking | | ● | | | |
| Mixes fonts on same line | ● | ● | | ● | ● |
| Opens text-only documents | ● | ● | ● | ● | ● |
| Opens formatted Word documents | ● | ● | ● | | ● |
| Opens formatted MacWrite documents | ● | ● | ● | | ● |
| Glossary | | ● | | | ● |

A bullet indicates that a program does have the feature in question; a space means it doesn't.

Unlike *PageMaker, Ragtime* works on the concept of *frames.* You draw a frame on the page and then specify whether the frame holds text, a spreadsheet, or a picture. Here you encounter the primary difference between *Ragtime* and other integrated packages: spreadsheets from *Jazz* or *Microsoft Works* appear in separate windows, requiring a cut-and-paste operation to include spreadsheet data in a text document. With *Ragtime,* however, the spreadsheet is part of the publication; changes in the figures are automatically reflected in the word processing document.

*Ragtime*'s approach to reflowing edited text over columns or pages is efficient; you create *pipelines* between separate frames by clicking a palette icon and then drawing a line between the frames. Subsequently, *Ragtime* automatically routes carryover text as you edit.

Only *Solo* also has a *Ragtime* feature that should be included in every publishing program: a search-and-replace command for fonts and type styles, which makes short work of changing a publication's overall appearance.

*Ragtime* has fewer publishing features than other products; it lacks precise typographic controls, automatic hyphenation, an extensive palette of patterns, and the ability to import formatted *MacWrite* and *Word* documents. But *Ragtime* is easy to use and suitable for producing documents with calculations or tabular information brought in from its spreadsheet.

### ReadySetGo 3.0

Manhattan Graphics' *ReadySetGo* 3.0 resembles its predecessor in name only. The new version includes additional options such as automatic hyphenation, kerning, and spell checking. It boasts a re-

***Feature-by-Feature Comparison***

*Much of the information included in this comparison of desktop publishing program features was based on prerelease software and input from manufacturers. Prior to purchase, you should make sure a product actually has the features you need.*

| | PageMaker 2.0 | ReadySetGo | LetraPage | Ragtime | Solo |
|---|---|---|---|---|---|
| **Drawing and Graphics** | | | | | |
| Number of rule types provided | 8 | 5 | 7 | 1 | 1 |
| Number of rule weights provided | 9 | 6 | [1] | 5 | 10 |
| Boxes | ● | ● | ● | ● | ● |
| Circles | ● | ● | ● | | ● |
| Shadowed boxes | | | ● | ● | |
| Round-cornered boxes | ● | ● | ● | ● | ● |
| Changes radius of rounded corners | ● | | ● | | ● |
| Bit-map drawing tools | | | | | ● |
| Fill patterns provided | 8 | 39 | [1] | 1 | 39 |
| Pen patterns provided | 8 | 39 | [1] | 1 | 39 |
| Graphic rotation commands | | | | | ● |
| Directly opens PICT documents | ● | ● | ● | ● | ● |
| Directly opens MacPaint documents | ● | ● | ● | ● | ● |
| Proportional graphic scaling | ● | ● | ● | ● | ● |
| Graphic cropping | ● | ● | ● | ● | ● |
| Embedded PostScript | ● | ● | | | ● |
| **Typography** | | | | | |
| Automatic kerning | ● | ● | ● | [2] | ● |
| Manual kerning | ● | ● | ● | | ● |
| Varies letter spacing for justification | ● | ● | ● | | ● |
| Variable word spacing | ● | | ● | | |
| Hyphenation method | dictionary | algorithmic | dictionary | n/a | n/a |
| Hyphenation exception dictionary | ● | ● | ● | | n/a |
| Soft hyphens | ● | n/a | ● | n/a | ● |
| Minimum font size | 4 | 1 | 2 | 1 | 9 |
| Maximum font size | 127 | 127 | 127 | 127 | 127 |
| Runs type around square shapes | ● | ● | ● | | ● |
| Runs type around irregular shapes | | | | | ● |
| Automatic leader characters | ● | ● | | | ● |

[1] *LetraPage* lets you combine patterns to produce new patterns, allowing a virtually unlimited number of rule weights and patterns.

[2] *Ragtime* lacks automatic and manual kerning features; however, you can select a "condensed" type style that tightens interletter spacing slightly, which can improve the appearance of large type.

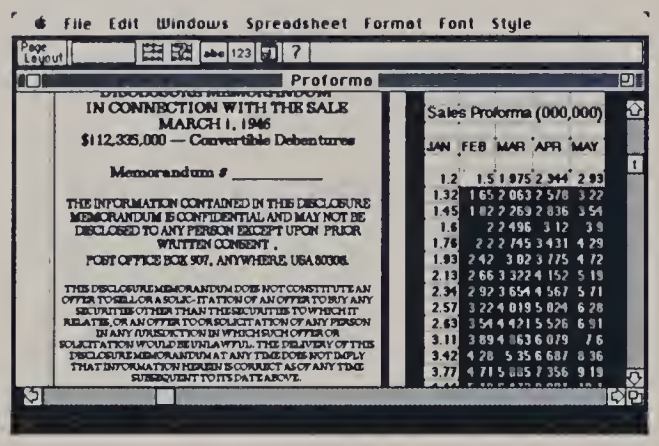



***Figure 2***

*An interesting combination of word processor, publishing program, and spreadsheet,* Ragtime *lacks sophisticated publishing features such as hyphenation and kerning, but it's ideal for creating forms and producing publications containing tables.*

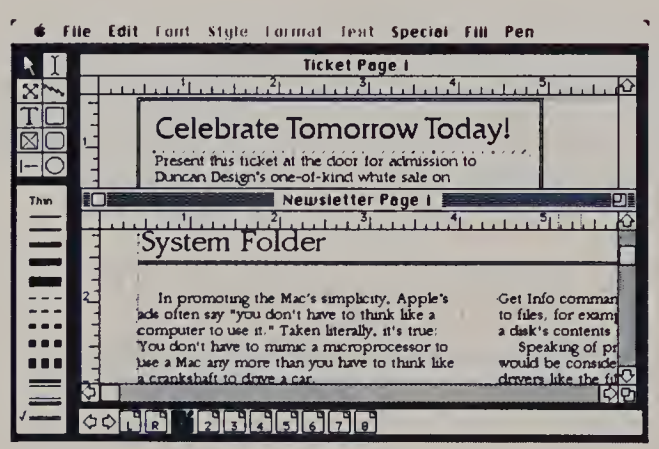



***Figure 3***

*This new version of* ReadySetGo *boasts a greatly improved user interface, including fast access to drawing tools and other pages, plus the ability to display a page in various sizes.*

vamped user interface analogous to *PageMaker*'s pasteboard metaphor and includes scroll bars for navigating within a page (instead of the previous version's awkward Show Page window), palettes for fast access to other pages, drawing tools, and the ability to display a page in various sizes (see Figure 3). To give you a head start in designing new pages, *ReadySetGo* 3.0 provides several preset page layouts you can format with a set number of columns and specific types of blocks.

*ReadySetGo* 3.0 retains a block-oriented structure resembling *Ragtime*'s frames approach. Every graphic or text element is contained in a square or rectangular block. You can specify the size and position of a block using the mouse, or you can use the Block Modification command and dialog box to specify values for precise positioning (most WYSIWYG programs rely solely on the mouse for sizing and positioning).

As with *Ragtime,* you establish text-reflowing links between blocks by drawing connections with a palette tool. *ReadySetGo*'s search-and-replace feature also recognizes links, allowing you to specify a search or replace in a single block, in a chain of linked blocks, or throughout a publication. The program also lets you wrap text around rectangular pictures. Overall, *ReadySetGo* 3.0 does a good job of combining word processing and page layout capabilities, and it lends itself to almost any desktop publishing task.

### LetraPage

*LetraPage* is the new moniker for *MacPublisher II.* The name change occurred last summer when Boston Software Publishers was acquired by graphic arts giant Letraset. *LetraPage* isn't an all-new program like *ReadySetGo;* it's more of a *MacPublisher III,* offering definite advantages over *MacPublisher II* but retaining some of its annoying limitations (see Figure 4).

Like *MacPublisher, LetraPage* divides a publication, called an *issue,* into *articles* and *pictures.* An article or a picture is essentially a text block or frame, except that its text or graphic is saved as a separate file, whereas *PageMaker, Ragtime,* and *ReadySetGo* 3.0 save a publication's design, text, and graphics in one file. The issue is simply a file containing a list of articles and pictures along with their positions. This approach has some advantages. Text alterations are saved in the original file, rather than only in the publication; you can use the same article in other publications without having to duplicate its text; and *LetraPage* automatically creates page jumps (such as *continued on page . . .* ) and generate a table of contents by creating a separate article containing a list of all the articles in the publication along with their page numbers.

With *MacPublisher,* the drawback of this approach was that you had to make text-editing changes in the article's window, rather than directly on the layout surface. *LetraPage* eliminates this shortcoming by allowing you to edit and add text directly while viewing in actual size. A new tool palette provides text-editing and drawing tools, as well as one-click access to rulers and other pages.

Although you can avoid screen clutter by altering text directly on the actual-size view, you can't overcome the inability to mix different fonts on the same line, or different font sizes in the same article. Each element must be a separate file that you create, format, and then drag into place. This limitation is especially annoying in jobs that require numerous fonts and type sizes.

*LetraPage* boasts several unique features, including the ability to print text and graphics in color on an ImageWriter II; to print a document at twice its actual size, resulting in sharper resolution when combined with the ImageWriter's 50 percent reduction option; and to save a page as a *MacPaint* or *MacDraw* document. Like *ReadySetGo, LetraPage* allows precise positioning and is also the only product described here that can automatically color-separate a page.

With its automatic page jumps, its table of contents, and its ability to reuse articles without duplicating their texts, *LetraPage* is best suited for producing periodicals, manuals, and reports. (An optional desk accessory, *LetraIndex,* lets you generate indexes automatically.) Automatic color separation also makes *LetraPage* useful in preparing publications for professional printers.

### Solo

Mac America's *Solo* is the Swiss Army knife of page-layout programs, combining a remarkably complete array of drawing features (for both object-oriented and bit-

mapped graphics) with word processing and page-makeup capabilities to provide a fast program that takes up only about 100K of disk space. *Solo*'s unique operating style may require some adjustment, but the rewards are worth the time and effort. *Solo* can perform page-layout tricks (such as wrapping text around irregularly shaped graphics) with an ease that no other Mac publishing program can rival (see Figure 5).

*Solo* opens with a Finder-like desktop that lets you open new or existing documents as well as perform disk-management tasks. There are icons representing the Clipboard and several specialized windows that control the search-and-replace feature and the text glossary.

While there are significant differences, *Solo*'s approach to publication organization is closer to *LetraPage*'s than to those of the other programs. A publication's text is stored in separate files. Unlike *LetraPage,* however, *Solo* stores graphics in the publication's file, called a *presentation.* You can also use the typing window to create short text elements; these are also stored in the presentation.

*Solo* is the only program of the five previewed that makes you open a window to edit, rather than altering text directly on the layout. Another significant difference is that *Solo* doesn't show fonts and styles in the text window but represents them using codes. Fortunately, you don't have to remember and type the codes; *Solo* inserts the appropriate code when you choose a font, style, or size from its menus.

Although this code approach goes against the Mac's WYSIWYG philosophy, Mac America claims it has the advantage of letting you quickly make global font and style changes. However, *Ragtime* has the same ability, while still showing fonts and styles.

Moving elements between pages is easy, thanks to the program's ability to scroll an entire publication, not just one page. You simply drag items directly to the desired page. *Solo*'s drawing features combine such *MacDraw*-like features as polygons and arcs with *MacPaint*-like tools such as a spray can, various brush shapes, a pencil, an eraser, and even a FatBits equivalent. *Solo,* however, supports more QuickDraw transfer modes (the way objects appear when other objects overlap them) than *MacDraw* or *MacPaint.* You can also stretch or squeeze text to produce special styles for headlines, a technique replicated in other publishing programs by pasting *MacDraw* text into the program and stretching it. *Solo*'s most impressive feature is its ability to wrap text around irregularly shaped graphics within seconds; the text rewraps if you edit it or change its font or style.

Providing a capsule description of *Solo* is difficult; listing its ideal applications is harder still. It's a capable program that's at home producing a display ad or a lengthy manual. If you can live with its code-oriented approach to font manipulation, *Solo* deserves a closer look.

### Making a Choice

When you shop for a desktop publishing program, spend some time with each offering to acquaint yourself with its operating style. All the programs described here are worthy contenders, but each has its own approach to producing printed pages. *LetraPage* and *Solo*'s technique of storing text separately may prove useful for book or manual production. However, it's of little value for short jobs, since editing changes are stored in the original files as well as in the pasted-up text.

Similarly, *Ragtime*'s built-in spreadsheet is useful for producing business reports or complex tables, but its inability to kern makes it unacceptable for jobs that require high-quality output.

Moreover, don't choose a product simply because it has more features. Automatic hyphenation, for example, isn't worth much if you only create documents with ragged margins, and there's no reason to buy a program that produces tables of contents if you don't need them.

Finally, keep in mind that WYSIWYG programs represent only one approach. Code-oriented programs like FTL Systems' *MacTEX* lack the click-and-drag simplicity of the products described here but can automatically generate tables of contents and indexes, and offer finer typographic control.

These WYSIWYG publishing products are narrowing the gap between the Mac and dedicated publishing workstations. With the arrival of full-screen displays and faster Macs, the gap will grow narrower still, and Macintosh publishers will have more and better tools at their disposal. □

See *Where to Buy* for product details.

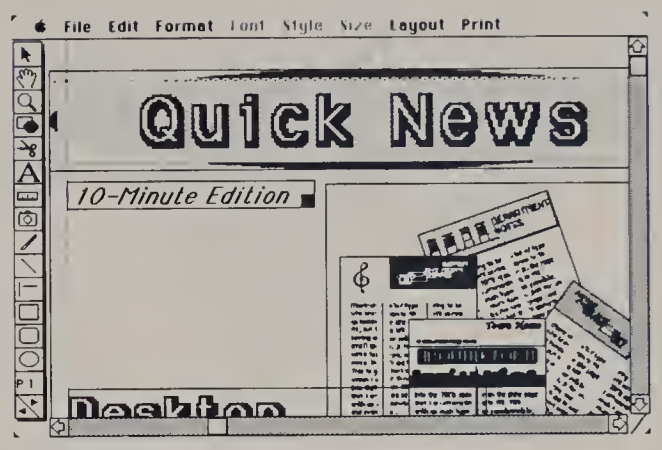



***Figure 4***
LetraPage *is an enhanced version of* MacPublisher II *and features a tool palette for quick access to layout and drawing tools, plus the ability to edit text in the full-size view, shown here.* LetraPage *generates tables of contents and page jumps automatically, but it won't let you mix different fonts in the same line or different font sizes in the same text block.*

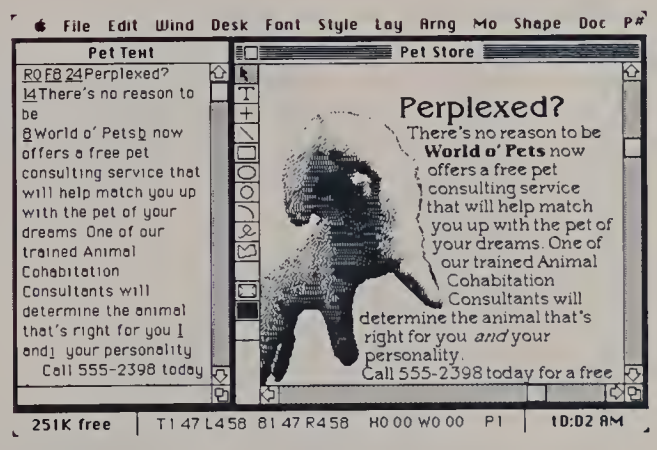



***Figure 5***
Solo *lets you wrap text around irregularly shaped graphics. The left window contains the text and its font codes, while the right window shows the text as it appears on the page.*

# Building a Multiuser

MICK WIGGINS

*Learn how to custom-build a multiuser accounting application with Omnis 3 Plus and install it on a network*

***by Steve Mann***

Whether you work for an insurance company, an accounting firm, or an architectural concern, you can probably streamline your business with multiuser computer applications. All you need are a few Macs, a multiuser database program, a hard disk, and some network software. By building a simple multiuser application with Blyth Software's *Omnis 3 Plus,* a powerful database manager, you can begin learning to create and install your own network applications.

A general ledger is an excellent application for demonstrating the value of a multiuser installation. You can create a general ledger in *Omnis 3* and install it on an AppleTalk network running Infosphere's *MacServe* network software. In a small business that does a lot of accounting, one or two employees might enter financial transactions as needed during the course of the day. A third person would be responsible for the overall accounting function and would print and review reports, make adjustments, and close out each accounting period.

### The General Ledger

A general ledger is conceptually quite simple. It has three components: a set of accounts, transactions, and reports. The set of accounts includes all important financial categories, such as cash, salary expenses, and equipment. Transactions describe the financial activities of the company, such as paying employees or purchasing a machine, in terms of those accounts. Reports, like an income statement or a balance sheet, summarize the company's financial activities and

# Application

status. For our purposes, you needn't be concerned with the details of accounts, transactions, or reports.

You build the general ledger template—or any other application, for that matter—in three general steps. First, you describe the kind of information you plan to store in the database by defining the database's file formats. Second, you create entry formats so that you can enter information in an orderly fashion. Finally, you design report formats that organize and collate specific information in the database.

Building this application demonstrates *Omnis*'s major customization features. The high-level schematic of the finished general ledger shows more detail. You may also obtain a copy of the source code to the general ledger by writing to the author in care of *Macworld,* including a blank 400K or 800K disk in a self-addressed, stamped envelope.

**Defining File Formats**

You must define two file formats for the general ledger: the account file and the transaction file (see Figure 1). The account file keeps track of the outstanding balances for each account. The transaction file contains the individual transactions that affect those balances.

You define a file format by clicking on successive lines of the *Omnis 3* file definition window and entering a field name of up to eight characters on each line. For each field indicate the appropriate options for data type and field length and whether you want the field indexed (a technique that speeds up searching and sorting on those fields). You also have to indicate that the account and transaction files are related by using the Set Connections choice on the Amend File Format.

**Entry Screens**

Once you've defined the file formats, you design an entry format that lets users record specific information in the database. The entry format is essentially a form that appears on screen. You create the format in a window in which you define field names and lengths and other field attributes (see Figure 2). To position a field, you just double-click at the place you want it to start, and the program displays a dialog box in which you specify all the details for that field, including a variety of options such as entry checking, calculated fields, or relational lookups.

You can also create an *array.* Arrays can save you substantial development time and irritation, once you understand how they work. Drawing an array rectangle lets you define a single row of fields at the top of the array. When you run the application, *Omnis* automatically duplicates the single line at the top of the array so you can enter the information for multiple lines using those same fields. In addition, you can define grand totals at the bottom of the window that the program updates automatically.

**Sequences**

You can further tailor entry forms by defining custom function buttons. You assign one or more high-level language programs to each button. These programs, called *sequences,* may include a variety of commands. I've defined function buttons for both the account maintenance and transaction entry formats (see Figure 3). The account maintenance entry form has buttons labeled Insert, Change, Delete, Next, Find, and Quit. The transaction entry format includes Insert and Quit buttons.

Each button is assigned a sequence. Some are simple, others are reasonably complex. For instance, the Change and Delete buttons check for errors, making sure that critical fields are left unchanged and that nonzero accounts are not deleted. The Insert button in the transaction entry format checks to make sure that the total debit amounts equal the total credit amounts. The button also loops through the entry form array and inserts each line in the transaction file.

**Reports**

The general ledger requires four standard financial reports:

- an income statement, a summary of all income and expenses;
- a balance sheet, a summary of all assets and liabilities;
- an audit trail, a detailed list of all current transactions; and
- a trial balance, a summary of all accounts and their balances.

The income statement, balance sheet, and trial balance are printouts of certain accounts in the account

file. The audit trail is a printout of the transaction file. Each report includes minor calculations as well.

Defining *Omnis* reports is similar to creating entry screens. First, you lay out whatever text you want, specifying the desired fonts and type sizes (which show up only on the final printed version). You then double-click where you want to locate specific data file fields or temporary, calculated variables.

Each report is divided into sections for headings, detail lines, report totals, and so on. You can have up to nine levels of automatic subtotaling and a variety of format combinations. You can also specify sort sequences, output destinations, and search criteria for each report.

### Custom Menus

*Omnis* lets you create custom pull-down menus (see Figure 4). You can attach a group of commands (much like a sequence, only simpler) to each menu choice. For instance, you can print a report, open a file, or activate an entry form from a menu. You can disable all the default menus except for the File and Edit menus, making the finished program look like other stand-alone Macintosh programs.

The general ledger includes two custom menus: GL Processing and GL Reports. GL Processing lets you enter and change account numbers, enter accounting transactions, and perform period-end processing. GL Reports lets you print any of the four financial reports.

### Multiuser Installation

Once you've built an *Omnis* application template, whether it's a general ledger or a sales-tracking system, you can run it as a multiuser program. This is where *Omnis 3 Plus* really shines. Just install the network hardware and software, copy multiuser *Omnis* onto your disk server, and start it up. No program modifications are required, although you may encounter some problems installing the network software.

Most network software requires at least one hard disk on the network. *Omnis* runs on several networks including Corvus's OmniNet, 3Com's EtherMac, General Computer's HyperNet, and Sun Mac from Sunol Systems. For this article we started with a 512K Mac and an Apple HD20. We then attached two Mac Pluses with an AppleTalk cable and installed Infosphere's *MacServe* networking software. Both *Omnis* and *MacServe* require at least 512K.

Cabling should not be a problem. AppleTalk is inexpensive and easy to set up. The documentation includes detailed explanations and pictures of how to cable several devices together. Basically, you run cables from one Mac to the next in a daisy chain, attaching a cable to each Mac's printer port.

### Installing MacServe

*MacServe* is a little more complicated to install, mostly because of the program's poorly organized documentation. I recommend that you ask an experienced technical person for help if you are at all uncertain. Start with the Infosphere and Blyth technical support staffs.

You must set up one hard disk on the network as a *net server*. This server is the hardware headquarters for controlling access to the network's shared disk storage. *MacServe* includes an install program that makes this step straightforward. Using a program

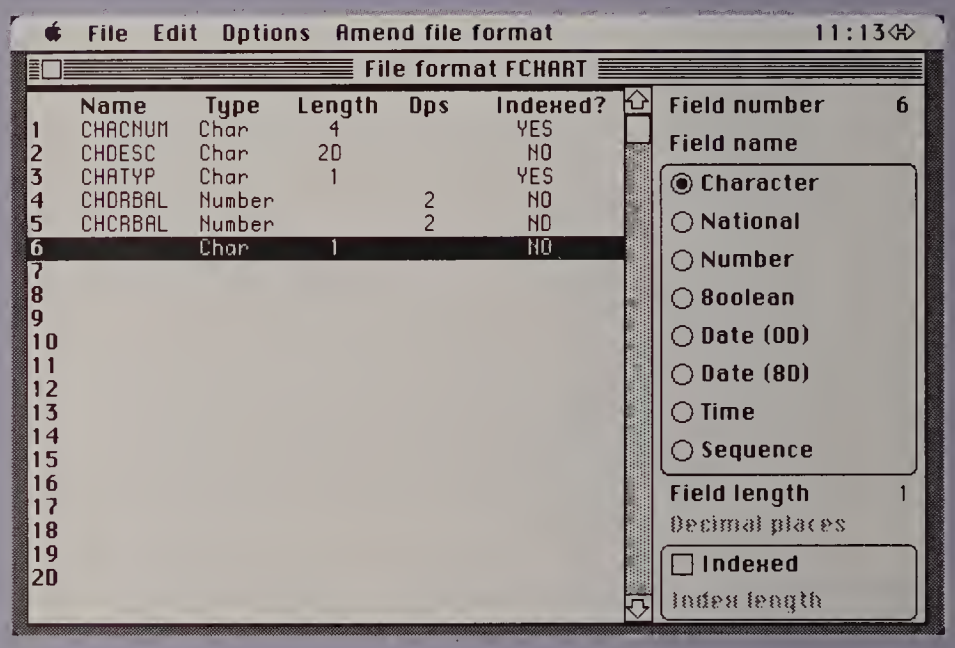



***Figure 1***

*The account file format includes the following fields: account number (CHACNUM), account description (CHDESC), account type (CHATYP), current debit balance (CHDRBAL), and current credit balance (CHCRBAL). The transaction file (not shown) includes account number (GJACNUM), transaction date (GJDATE), transaction description (GJDESC), debit amount (GJDRAMT), and credit amount (GJCRAMT).*

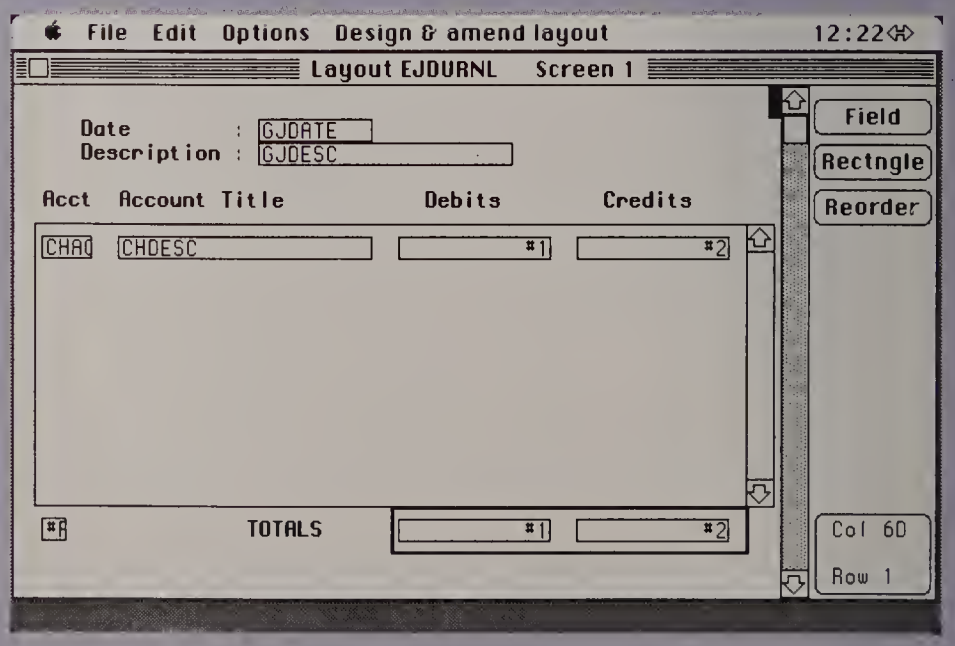



***Figure 2***

*The entry format for the transaction file shows various transaction field names, and two temporary variables labeled #1 and #2. The smaller scrollable window that dominates the center of the screen is called an* array.

called the *network manager*, you then create one or more *volumes*. Volumes are divisions of a disk drive. They facilitate shared use of a disk's storage space on a network. Each volume has various changeable attributes. For instance, some volumes may be private, others shared.

The *MacServe* documentation makes volume setup more complicated than it needs to be. For clarification, the procedure works basically as follows:

- Create an "automatic" volume (an unshareable, or private, volume that is automatically activated when you boot the net server).

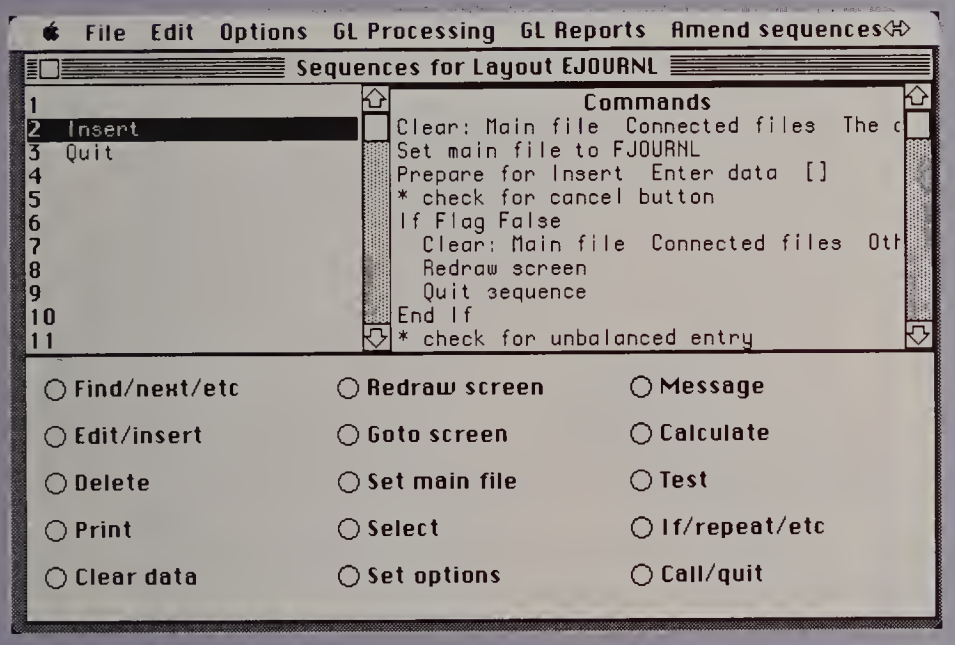



***Figure 3***

*Omnis 3 Plus makes it easy to define sequences. You click on the sequence title line (on the left) and enter an appropriate title. You then click on specific commands, shown at the bottom of the window, and they're automatically inserted on the right, one line at a time.*

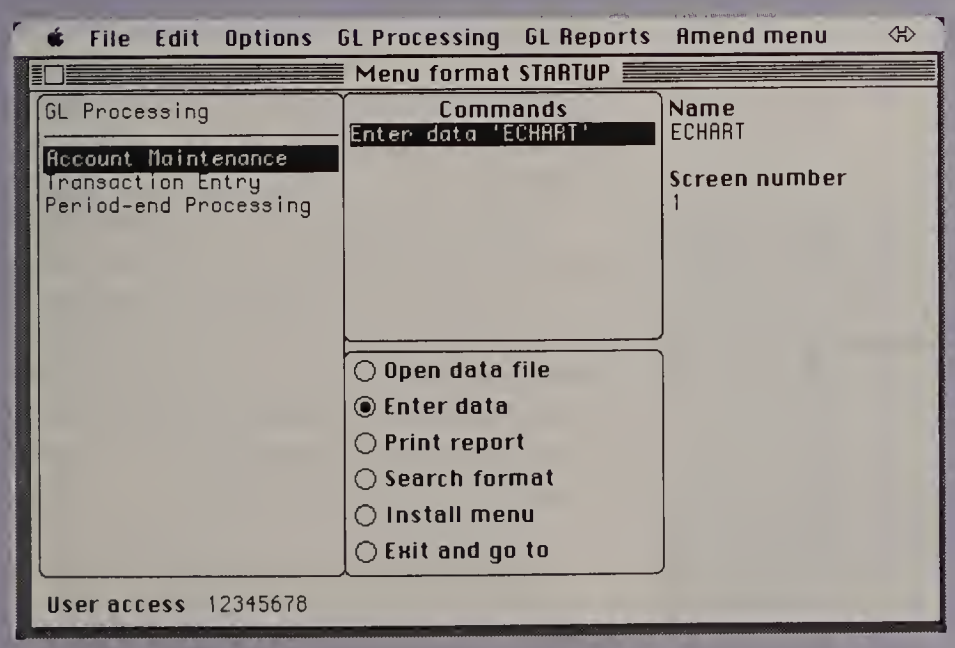



***Figure 4***

*You create pull-down menus and a dialog box that appears when you select Menus from the Options menu. The GL Processing menu is the start-up menu, which means it is automatically displayed when you start an* Omnis *template.*

- Restart the system with any HD20 start-up disk. *MacServe* mounts (activates) the automatic volume and creates a desktop file for it. The desktop file must reside on each volume of the network.
- Using the network manager, reclassify your *Omnis* volume as "private."
- Copy all the *Omnis* program files and your application and data into the volume.
- Reclassify the volume again as "network" (shared), so that everyone on the network can access it. Network volumes are marked as locked, but you can still run *Omnis* and your template.
- Finally, you have to create a system disk, with System and Finder files and the *MacServe* drivers, for every other Mac on the network (the network users). This task is also simplified by the *MacServe* install program. When you start up each system, *MacServe* loads automatically. You use a special desk accessory to access the *Omnis* hard disk volume on the net server.

### Running Your Application

Once the network is set up, which should take a few hours, your application is ready to run. Network users mount the *Omnis* volume, start up the template, and get to work. *Omnis* takes care of any problems that may arise from more than one person simultaneously accessing the same database.

Network setup and administration can be tricky. Blyth suggests you take the following precautions. Have everyone use the same version of the System and the Finder (3.2 and 5.3 are recommended). Make sure that there is only one copy of *Omnis 3 Plus* on the network and that it is a multiuser version. Keep good backups in case of a network failure. I also suggest that you get a set of Blyth's *Omnis* technical notes.

### Network Performance

There's no doubt about it—AppleTalk is not a high-performance network. What do you expect for $50 per user? With three users, all performing network-intensive general ledger activities, there were noticeable processing delays, but they weren't unbearable. While the odds of three people doing the same thing at exactly the same time are low in a real business situation, performance would be improved with a SCSI hard disk. A variety of tests revealed no apparent problems with either *MacServe* or *Omnis*.

Overall, I'm impressed with the combination of *Omnis 3 Plus* and *MacServe*. For all its power *Omnis* is easy to learn and creates multiuser templates as easily as single-user ones. *MacServe* could be easier to se up, but on the whole the product is good. Frankly, I can't imagine an IBM PC-based multiuser solution being nearly as simple. □

See *Where to Buy* for product details.

# Reviews

## The New Write

***WriteNow for Macintosh*** *1.0*

***Word processor.*** ***Pros:*** *Multiple columns, spelling checker, auto-numbered footnotes, fast and efficient, easy to use.* ***Cons:*** *Lacks glossary, file conversion within the program, cursor-key control; needs more flexible multicolumn formatting.* ***List price:*** *$175.* ***Requires:*** *128K.* ***Copy protection:*** *None.*

T/Maker's *WriteNow for Macintosh* is a polished word processor that retains the elegance of *MacWrite* but adds features like multiple windows, footnotes, multiple columns, and a spelling checker (see "Spell Checking"). Although it lacks capabilities such as cursor-key control, mail merge, and style sheets, *WriteNow* provides most of what you need for writing everything from memos to dissertations. (T/Maker intends to supply cursor-key control when Apple standardizes the cursor-movement commands.)

The program lets you open as many documents as memory permits. Although you can shuffle windows, there's no menu to help select and keep track of open documents. *WriteNow* supports the zoom box of the 128K ROM. The program's text selection shortcuts are limited; you cannot select a single line or paragraph by clicking the mouse as you can with *Word*.

Operations like saving, cutting and pasting, and scrolling are almost instantaneous. The program has a comprehensive Undo command as well as numerous keyboard shortcuts. In addition, you can save disk space by using the Save as Compact option.

### Formatting

*WriteNow*'s flexible formatting options allow you to specify one to four columns—each with its own footnote region (see "WriteNow Formatting"). Although you cannot mix different column layouts within a document, you can adjust the margins of a column as long as it doesn't exceed the width of the other columns.

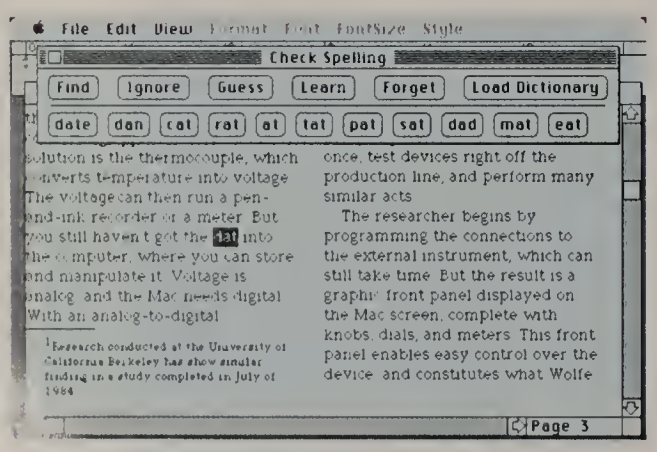
*WriteNow*'s ruler resembles *MacWrite*'s, but ruler changes apply only to the selected text or the paragraph that contains the cursor. You can scale the ruler in inches or centimeters but not points or picas. The ruler has three options: relative, identical, and continuous. Relative adjusts all ruler settings relative to the settings of the selected paragraph; identical modifies only paragraphs that have settings identical to those of the first selected paragraph; and continuous lets you set ruler margins, indentation, or tabs at any place on the ruler rather than at fixed intervals (1/16 inch). When you move ruler markers, the program provides audible feedback in the form of a clicking sound.

Menu options are available for moving paragraph indents and left margin markers to the next tab stop to the left or right of the current location. This lets you format outlines quickly once you set up the ruler with the appropriate tab stops. *WriteNow* doesn't have decimal tabs, but you can specify any character as a leader between tab stops.

Scaling the ruler allows you to edit in larger fonts on screen and print in smaller fonts. On Macs with 128K ROM, optimizing spacing between characters can be useful because the character spacing on the Mac and the LaserWriter differ slightly. *WriteNow* also has a command that returns the cursor to the insertion point.

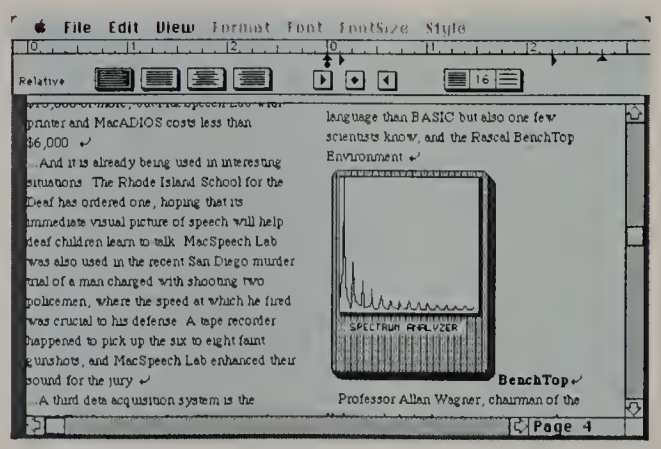
### Headers, Footers, and Footnotes

Documents open with a four-line blank header and footer, which can be placed anywhere in a document. When you have multiple headers or footers, the region size defaults to the tallest header or footer region for the entire document.




***Spell Checking***

*An easy-to-use, editable, 50,000-word spelling checker takes up only a small portion of the screen and displays a series of possible spellings.*

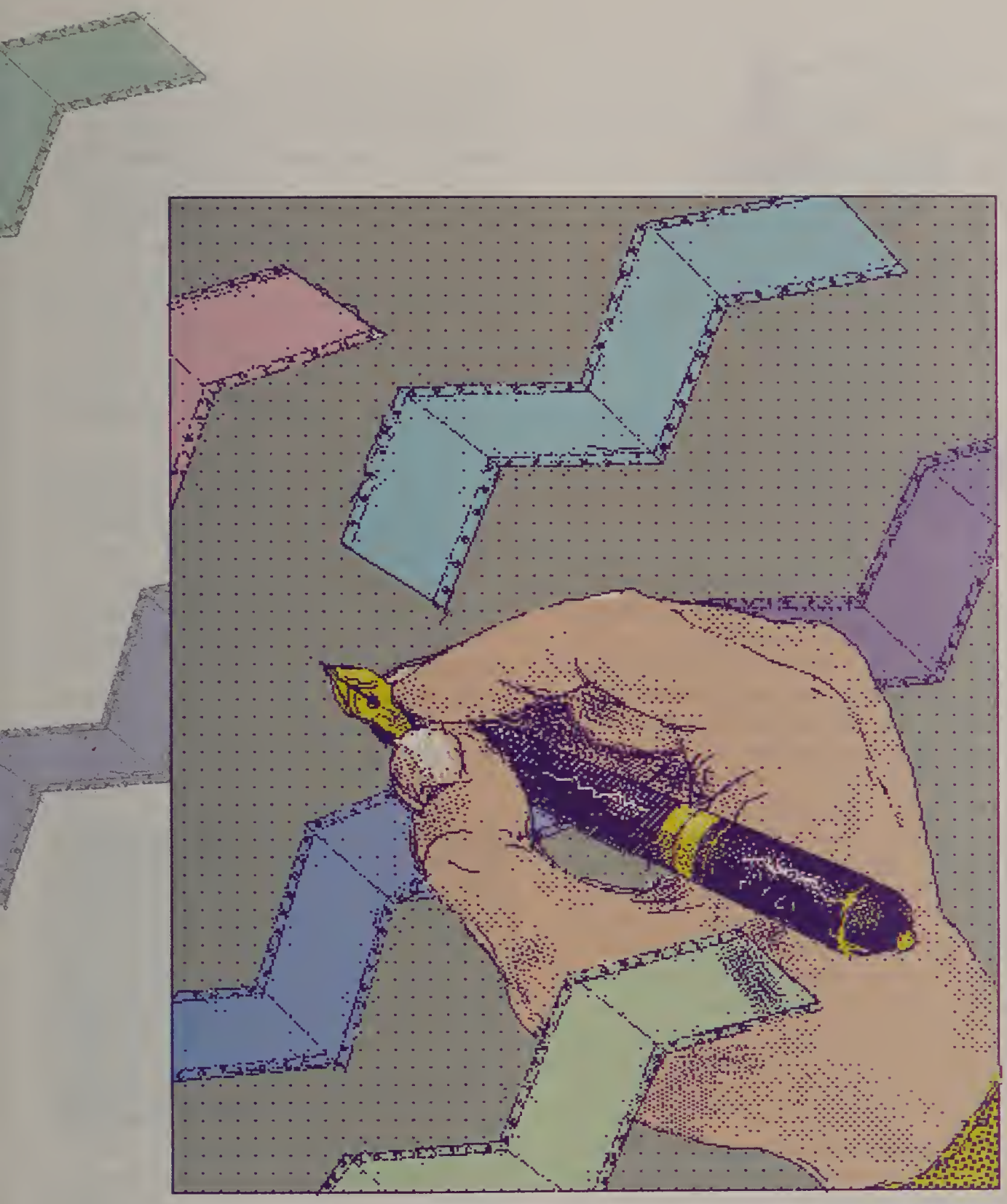



***WriteNow Formatting***

*You can format text and graphics in up to four columns, set line spacing from 1 to 99 points, and copy and paste ruler formats.*



ILLUSTRATIONS BY MARK ULRICH



Headers and footers can contain page numbers, the date, the time, and even graphics, and you can use any ruler setting and any combination of fonts and styles. For two-sided copying, you can create footers that alternate between even- and odd-numbered pages.

You create auto- or manual-numbered footnotes in the same way as headers and footers, inserting footnotes of any length that consist of both text and graphics and have their own ruler settings, fonts, and type styles. The program keeps footnotes on the same page as notations.

**Type Controls**

*WriteNow*'s type control options include line spacing of up to 99 points, font sizes from 4- to 127-point, condense and extend options, hyphenation, variable superscript and subscript positioning, and global font and type style changes.

When you insert a soft hyphen, the hyphen marker appears only when the hyphenated word splits across two lines of text. You can also insert nonbreaking spaces and line breaks. Superscripts and subscripts can be shifted in one-point increments from the baseline.

**Other Features**

*WriteNow* allows you to embed graphics within a paragraph or format the image as a separate paragraph. Although you can scale graphics to any proportion, a graphic can only be as wide as the column it's in. The program automatically keeps graphics taller than the page-wrap factor to avoid splitting an image between two pages. However, you can format a paragraph containing a graphic to cross a page boundary.

**Utilities**

Show Space displays nonprinting characters (for example, spaces, returns, and tabs), page breaks, and the boundaries of headers and footers. You can choose between optimizing fonts for the printer (so that correct line lengths are shown) or for the Mac screen on a Mac Plus or 512K Enhanced.

Medium-quality, tall-adjusted ImageWriter printing is possible while you continue working with the Mac, and *WriteNow* also lets you set up any document as a start-up document. *WriteNow*'s 50,000-word spelling checker is not as fancy or complete as *MacLightning,* for example, but it is fast and accurate.

*WriteNow* doesn't let you save documents as text or import *MacWrite* or *Word* documents from within the program. Instead, the program comes with a Translator utility that performs the essential conversions. In addition, the Translator offers an interchange format that gives developers a common format for importing and exporting files to *WriteNow.*

**The Final Word**

Although *WriteNow*'s range of features is more than adequate, some sophisticated options are missing. Control of cursor keys on the Mac Plus keyboard, a glossary, more text-selection shortcuts, and a file conversion utility accessible from within the program top the list. Some writers may prefer the precision control offered by programs like *Microsoft Word* that allow you to enter type and page-setup specifications numerically.

The program's greatest asset is its feel and ease of use. The program's features—including editing, formatting, spell checking, and footnoting—are fast and efficient. You're not faced with numerous dialog boxes to fill in or unintuitive procedures. And the documentation is well written and indexed. Overall, *WriteNow* does what good software is supposed to do—makes complex tasks seem effortless.—*Dan Farber*

See *Where to Buy* for product details.

# Making Money With Your Mac

***Market Pro** 1.0*

***Financial market analysis.*** ***Pros:*** *Fast, has no competition on the Mac.* ***Cons:*** *Expensive, some IBM PC programs better.* ***List price:*** *$295.* ***Requires:*** *512K.* ***Copy protection:*** *None.*

It is the hope of gaining a slight edge on the great mass of investors that draws one to a stock market program. Until now, IBM PC owners have largely been the only ones to enjoy the benefits of investment programs. Actually, everyone *except* Macintosh owners has had access to computerized financial market analysis programs for several years now. *Market Pro* is the first such program for the Mac.

*Market Pro* consists of three modules: technical analysis, fundamental analysis, and portfolio management. Data on stocks, bonds, and mutual funds can be entered manually or downloaded from a remote database with the program's own communications routines.

Though both the manual and the program indicate that you have a choice of databases for remote linkage and that the program includes setup routines for both the I. P. Sharp and Dow Jones News/Retrieval databases, in fact you can connect only to I. P. Sharp. Fortunately, Sharp is one of the best financial database services and provides information on more than 11,000 stocks and bonds. (An additional *Market Pro* program, now in beta testing, will allow you to handle commodities.)

### The Informed Investor

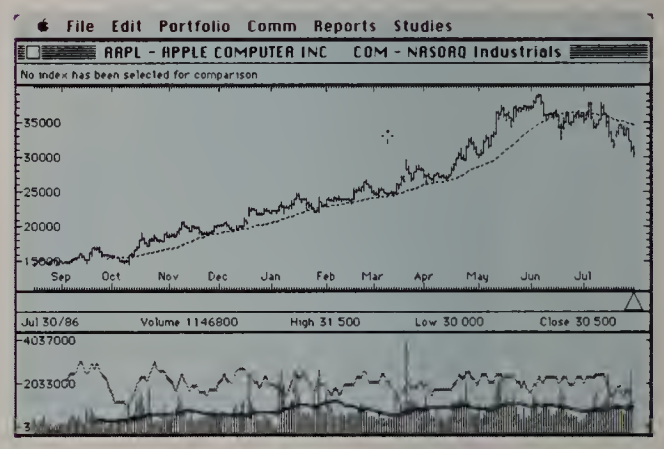
The portfolio management module is basically for keeping track of transactions, and its line-and-column entry format should prove adequate for most people.

Technical analysis is the heart of the *Market Pro* program. With information either entered manually or downloaded via a modem from the Sharp database, the program generates a standard bar chart showing the high, low, and closing prices (see "Viewing a Stock's Performance"). The upper portion of the screen shows the price fluctuation, and the lower portion displays a bar chart indicating sales volume. The program handles up to one year's worth of daily trading in any stock, market index, or mutual fund.

A pull-down menu provides eight different technical tools commonly used to analyze a stock's performance, including a choice of moving averages, calculated either as simple or exponential moving averages. Although you can display more than one average at the same time, it becomes visually confusing with more than two. You can also compare the price action of a particular stock or fund against the overall market, and calculate the on-balance volume, momentum, advance/decline line, overbought-oversold ratio, and Welles Wilder Relative Strength Indicator. Finally, there is a quick, simple tool for drawing trend lines.

The charting and indicator drawing routines are lightning-fast and easy to read. There are two relatively minor nuisances: You are limited to displaying one year's worth of data; and, once an indicator is drawn, nothing on the screen tells you which indicator you've selected.

The third module allows you to examine a company's fundamentals—price-to-earnings ratio, relation of debt to equity, dividends, growth record, and the like. Although the same vital statistics are available simply by calling the Sharp database using any communications program, *Market Pro* lets you set criteria to focus your search for companies that meet your particular investment requirements.




***Viewing a Stock's Performance***
*Each day's price is graphed with its high, low, and close. The rising curved line is the 30-day moving average of the closing price. The dark lines at the bottom of the chart represent daily volume. The gray wavy line is a Wilder Relative Strength Indicator, plotted on a 14-day moving average.*

Communicating with *Market Pro* is perhaps a bit too easy. If you double-click on the telephone icon the program will immediately dial I. P. Sharp and try to download data—even if you have no stocks selected. The program will hang for a while and then eventually tell you it cannot do what you already knew it could not do.

No computer user who is serious about investing in the stock market should be without a stock market program. *Market Pro* does the job better than most such programs available for the IBM PC, though it's not up to the best of them.–*Bob Schwabach*

See *Where to Buy* for product details.

# 3-D Dreams

***Phoenix 3D Level One** 1.0*

***3-D modeling program.*** ***Pros:*** *Offers a variety of rendering styles; individual points can be manipulated; reasonably priced.* ***Cons:*** *Can't see four views simultaneously; manual could use a more detailed tutorial.* ***List price:*** *$39.95.* ***Requires:*** *512K.* ***Copy protection:*** *None.*

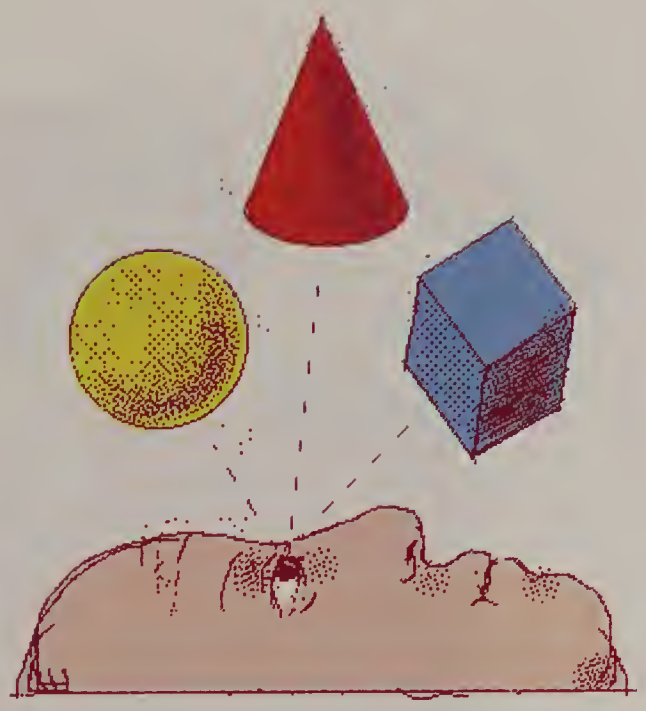
Some of the many approaches to three-dimensional modeling are geared for engineers, offering measurement capabilities, text, and plotter output; others are more appropriate for graphic artists, providing adjustable light sources and multiple shading methods (see "3-D In Depth," *Macworld,* June 1986). The latest entry into the 3-D arena, *Phoenix 3D Level One* combines many of the capabilities of the existing programs into a versatile modeling environment.

### Creation

*Phoenix 3D* provides one tool palette for creating shapes and another for manipulating and moving them in 3-D space. The Creation/Modeling tool palette has six polygon tools ranging from a triangle to an octagon and offers four basic 3-D shapes: cylinder, cone, sphere, and torus. A dialog box allows you to modify the shapes.

Two of the program's most useful tools are the Arbitrary Polygon, which lets you draw a freehand polygon with up to 22 sides, and the Arbitrary Cylinder, which lets you draw an outline that the program converts into a 3-D object by rotating it around a central axis (see "Shaping Up"). You can also extrude a surface backward instead of revolving it, allowing you to create bent surfaces such as a waving flag.

The Creation/Modeling palette contains a Text tool for typing up to 20 labels in a variety of fonts and styles, and a Selection tool for selecting and manipulating an



entire object or a section of an object. The Selection tool provides access to one of *Phoenix 3D*'s most powerful features, the ability to manipulate sections of a polygon. On a multifaceted sphere, for example, you can select a single point or a small area and drag the selected part outward to modify the model you're designing.

### Transformation

The Transformation tool palette lets you move objects in three dimensions. You can rotate an object left, right, forward, or backward; spin it clockwise or counterclockwise; shrink or enlarge it along any axis; or move it in any direction. When you move an object, the number of degrees of movement is displayed.

You'll want to experiment with different lighting, point-of-view, and rendering options. In addition to moving objects, the Transformation tools can move your vantage point, as well as two light sources.

### Render Unto 3-D

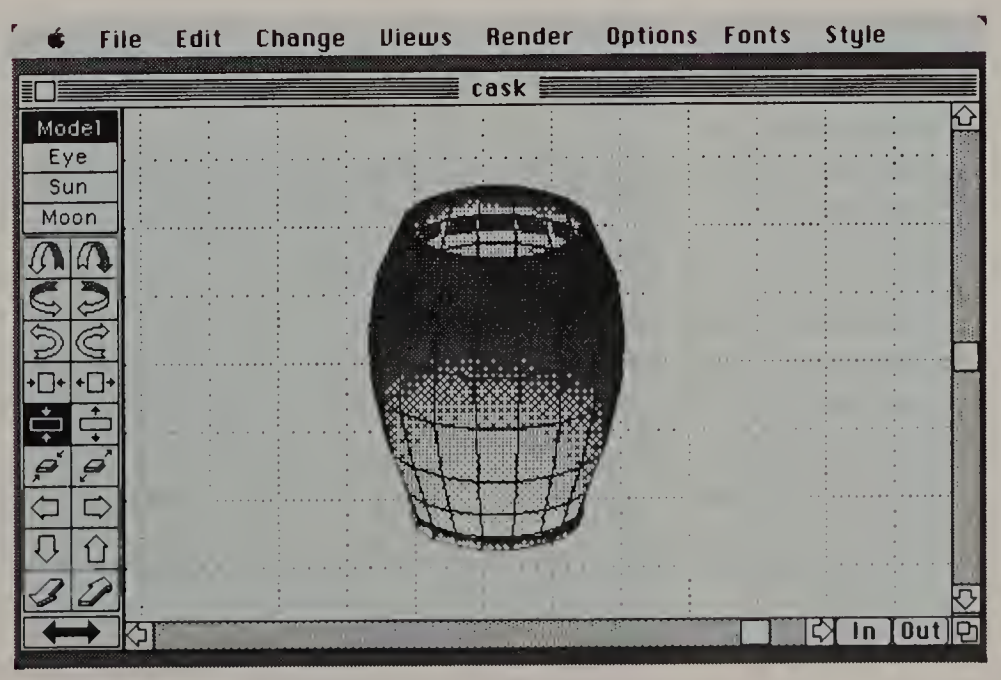
Drawings can be rendered in any one of a number of styles: wireframe, hidden line, shaded, and variations on these options. Such variations range from a simple wireframe outline to a smooth-shaded object with unframed faces. A unique Filter Image option adds random black and white pixels to a drawing to soften the image.

Complex shaded images can take several minutes to render, but the new version should speed this up by about 50 percent. (Version 1.1, which is available to registered owners of version 1.0 for $5, was unavailable at the time of this review.)

### Additional Options

Other *Phoenix 3D* features of note include an Explode Model command, which separates an object into its individual planes; a grid to help align components of a model; orthographic or perspective projection options; top/bottom, front/back, and left/right views of an object; a Zoom button; and various dialog boxes that allow you to enter an object's origin points, depth, number of facets, and the like. You can save an object as a *Phoenix 3D* model or as a *MacPaint* document, or you can transfer it to *MacDraw* via the Clipboard.

All in all, I'd put this program in the same league as *Easy3D* and *Mac3D. Phoenix 3D*'s user interface is not as intuitive as that of *Easy3D;* I prefer *Easy 3D*'s Lathe tool to *Phoenix 3D*'s Arbitrary Cylinder, for example. Nor is *Phoenix 3D*'s manual as helpful as *Easy3D*'s. And *Phoenix 3D* lacks *Mac3D*'s abilities to display an object's dimensions in inches or centimeters, and to create multipage documents. Nor




***Shaping Up***
*This illustration was created with* Phoenix 3D*'s Arbitrary Cylinder tool, which rotates an outline around a central axis. The program provides several shading options and lets you adjust two light sources.*

does it offer *MacSpace*'s simultaneous views (top, front, and so on) or plotter output capabilities. Despite these criticisms, *Phoenix 3D* is a well-conceived program, and I would recommend it as a good low-cost introduction to 3-D graphics.—*Erfert Nielson*

See *Where to Buy* for product details.

# A CAD System for Systems

### *Anatool, Structured Systems Analysis for the Macintosh*

***Systems-design CAD program.*** ***Pros:*** *Automates modern structured-systems development; enforces conformance to standard practices; rivals the best minicomputer-based programs.* ***Cons:*** *May be too expensive for individual use.* ***List price:*** *$795.* ***Requires:*** *512K with external drive or 512K upgrade with an 800K drive.* ***Copy protection:*** *Hardware key on serial port.*

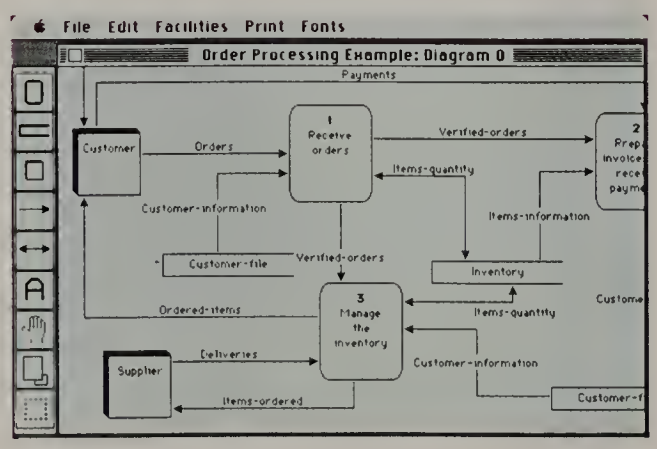
Structured Systems Analysis is a method of dealing with the internal communications problems that often bring complex programming and design efforts to a standstill. A remarkable new program called *Anatool* now makes the power of this method available to Mac users. Developed in France by Arfang, this program provides minicomputer-type systems tools for serious software developers, systems engineers, and consultants.

Most systems snarls can be avoided by carefully specifying data flows, material flows, and processes right from the start of a project. *Anatool* represents these structural elements with icons (see "Analyzing a Business System"). Processes (round-cornered boxes) show how the system acts on data or material. Flows, represented by arrows, link processes and connect the system to the outside world. Stores (open flat boxes) contain temporary deposits of material or data, and externals (square boxes) indicate sources of system input and destinations of output.

*Anatool*'s program logic interrelates the structural elements according to the rules of structured systems design. The resulting data flow diagrams are linked in a hierarchy, with diagrams for simple processes joined together at higher levels to form an overall description of a complete system. Alternatively, the system may be developed in true "top down" fashion, with main processes defined in terms of successively simpler processes. Even for less complex systems, the automated logic checking in *Anatool* is tremendously helpful. The program reminds you if objects are improperly defined or connected so that your final system specification has no gaps or omissions.

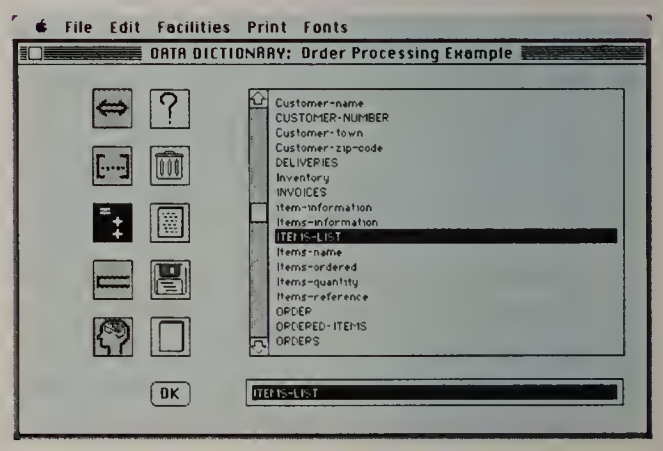
### Spelling It Out

Specifications require the definition of system elements. *Anatool*'s Data Dictionary (see "A System Dictionary") lets you record basic data and terms that require no definition; aliases, which are synonyms for the same data in different diagrams; and composite definitions that use structures composed of basic data. *Anatool* checks the Data Dictionary and flags any potential problems, such as missing definitions or conflicting aliases. Finally, the program can automatically create a standard specification, which is the translation of the data flow diagrams into text.




***Analyzing a Business System***

*Although the drawing tools enable you to draw the elements, the internal logic for checking connection of elements functions more like a programming language.*




***A System Dictionary***

Anatool *records and cross-checks data definitions in the system specification.*

Although the program is expensive, *Anatool* and a Mac Plus with a hard disk still cost less together than most equivalent IBM PC programs cost alone, not to mention the cost of VAX-level structured systems programs. *Anatool* is fast and easy to use and is a thorough implementation of structured systems methodology.—*Charles Seiter*

See *Where to Buy* for product details.

# Quality Accounting Software

***AMS General Ledger** 2.07*

***General ledger accounting.*** ***Pros:*** *Simple and straightforward; good features.* ***Cons:*** *None.* ***List price:*** *Version 2.08 $195.* ***Requires:*** *128K.* ***Copy protection:*** *None.*

***CheckMark Payroll** 2.02*

***Payroll accounting.*** ***Pros:*** *Integrated with general ledger; full featured; suitable for most companies.* ***Cons:*** *Design could be cleaner; documentation is weak.* ***List price:*** *$195.* ***Requires:*** *128K.* ***Copy protection:*** *None.*

CheckMark Software markets two accounting products for the Mac—*AMS General Ledger* and *CheckMark Payroll*. Each program can be used by itself, or you can transfer payroll information to the general ledger. There are good reasons for buying both programs.

### The General Ledger

*AMS General Ledger* has an excellent blend of features and a straightforward design. It is one of the easiest Mac general ledgers to learn and use but includes many features (such as clear menu structures and dialog boxes) that competing products don't implement as well. It's also one of the few Mac accounting products that run on a 128K system with dual floppy disk drives.

The ledger has five journals—cash receipts, cash disbursements, sales, purchases, and a general journal—with a similar user interface for each. The program produces the usual reports, including a chart of accounts, trial balance, transaction list, general ledger, balance sheet, and income statement. Most reports have options like account, transaction, or date ranges to increase reporting flexibility. Although the financial statements are preformatted with fixed headings, you can define one extra level of detail for the headings on the balance sheet and the income statement.

Additional features include up to nine departments (with consolidated or individual income statements), monthly or quarterly fiscal periods, support for multiple companies, password protection, budgeting, and recurring transactions. The program allows you to store up to one year's worth of detailed financial transactions. Only one fiscal period can be open at a time, but you can make adjustments to prior periods. Budget and income statement balances can be exported in SYLK format for use in other programs.

There are only three accounting menus: Set-Up, Transactions, and Reports. Transaction entry is straightforward (see "General Journal Data Entry"). Each transaction line is entered in a common editing area that shows an unlimited number of transaction lines. The program makes every attempt to automatically fill in information for you.

The documentation includes a brief tutorial and a good reference section, and minimal on-line help is available in the form of footnotes. Although the program deviates from the Mac interface a bit (in dialog-box and object-selection conventions), the overall package is of top quality.

### The Payroll

I wish I could be as enthusiastic about *CheckMark Payroll*. It probably has more features than any other Mac payroll program, but they are crammed into an overly simple design. The result is that data entry and payroll processing are not as clear as they could be. Users may have problems learning the program but, once past the initial hurdles, will probably find the package suitable for their payroll needs.

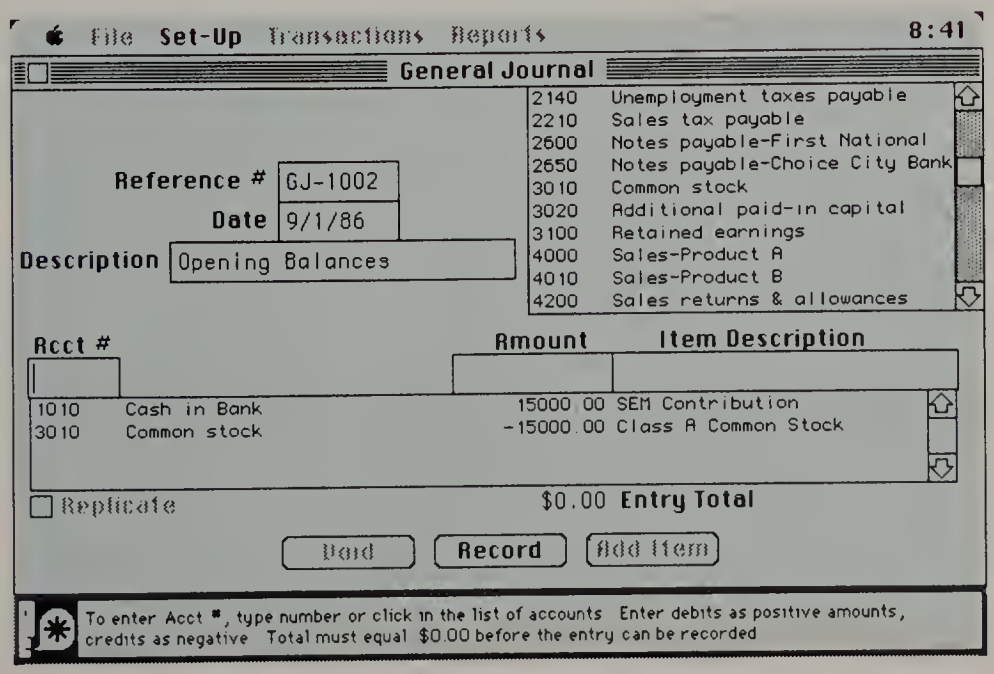
Like the general ledger, the payroll works on a 128K Mac with two floppy disk drives and handles data for up to 200 employees. A variety of pay-period, pay-type, and deduction options is supplied—more than enough for most companies. The program supports all important withholding requirements, including up to six user-defined state tax tables. It also allows up to six user-defined deductions, including fixed and variable amounts, taxable and nontaxable options, and percentage and dollar calculations. It's one of the few payroll progams I've seen that can handle nontaxable 401(K) retirement plans.

The program prints checks, W-2 forms, check and earnings registers, quarterly tax reports, and one-up mailing labels. All payroll data is stored in month-to-date, quarter-to-date, and year-to-date summaries. The earnings and check registers can be exported in SYLK format.

But you have to be careful when using *CheckMark Payroll*. For instance, it doesn't prompt you for variable-amount deductions, which must be entered when you're computing the current pay details for an employee. Paycheck details can be altered or deleted after a check has been printed, with no audit trail, making it easy to lose track of payroll details. If you don't set up your general ledger interface accounts properly or completely, incorrect ledger postings are generated.

The CheckMark documentation includes a tutorial, a company setup chapter, and a reference section. However, considering the number of options and features this program provides, it is woefully short on explanations and examples.

Despite such drawbacks, I'm impressed on the whole with these CheckMark programs. The general ledger is an




***General Journal Data Entry***
*This general journal transaction entry window is typical of all* AMS General Ledger's *journal windows. The chart of accounts is readily available in the upper-right-hand corner; clicking an account moves it to the entry line. Help text is displayed at the bottom of the window.*

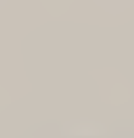
excellent blend of features, simplicity, and elegance. I'd like to see the payroll program enhanced to include more of those design characteristics. Chances are, however, that *CheckMark Payroll* will do jobs that most other Mac payrolls can't, even though it may take you a while to figure out how.–*Steve Mann*

See *Where to Buy* for product details.

# Front-End Typesetting for the Mac

***Textures** 0.8 (prerelease)*

***Typesetting program.*** ***Pros:*** *Powerful document design and formatting system; typesets large and complex documents that combine text and graphics.* ***Cons:*** *Harder to use than page-layout programs; requires learning the TeX language and using embedded codes.* ***List price:*** *$750.* ***Requires:*** *1MB.* ***Copy protection:*** *None.*



*PageMaker, MacPublisher,* and *ReadySetGo* are fine for designing publication pages on screen. But when it comes to producing large documents like books, page-by-page layout takes too long. These programs also lack the typographical features of a professional typesetting system.

*Textures,* from Addison-Wesley, turns your Mac into the front end of a typesetting system that drives PostScript-compatible printers and phototypesetters.

### Best of Both Worlds–Almost

*Textures* is a thorough reworking of TeX for the Macintosh. Many regard TeX (pronounced *tech*), a document preparation language developed for mainframes as an excellent tool for typesetting text, for producing complex technical and mathematical documents. TeX offers powerful typesetting features, such as automatic hyphenation, justification, kerning, ligatures, and batch pagination. I found the Mac's interface with multiple windows, pull-down menus, and keyboard entry for text and all formatting codes superior to, and much more enjoyable than, using TeX on a mainframe.

*Textures'* biggest plus is that it combines TeX's batch pagination system with the WYSIWYG (what-you-see-is-what-you-get) function of page-layout programs. However, *Textures'* WYSIWYG screen is noninteractive, which means you can preview a formatted document but can't move text or graphics around on screen like you can with *PageMaker.* Nevertheless, the preview function shortens the time needed to prepare a final document for typesetting.

### Formatting a Document

Using *Textures* is like developing a computer program: you write the source code, execute it, output it, and debug it if necessary. You first type TeX formatting codes into the text of your document; this procedure enables you to control the exact placement, style, and size of all text and graphics. You can also create macro commands to save time.

You import up to 4 megabytes of text from a word processing program or create text with *Textures'* editor. You can integrate graphics information from *MacPaint, MacDraw,* or the Clipboard with your text, or you can type PostScript code directly into your document. A TeX interpreter then reads and formats the document, providing messages or prompts in a dialog box.

### WYSIWYG Preview

After formatting a document, you can output it on screen for preview or to an ImageWriter or PostScript-compatible printer or phototypesetter. You can also magnify the preview display several times to look at each page in greater detail (see "Take a Closer Look"), except in the case of PostScript-coded images.

If your formatted document doesn't turn out right, debug it by repeating the editing (or encoding), interpreting, and previewing cycle.

### Scaling the Learning Cliff

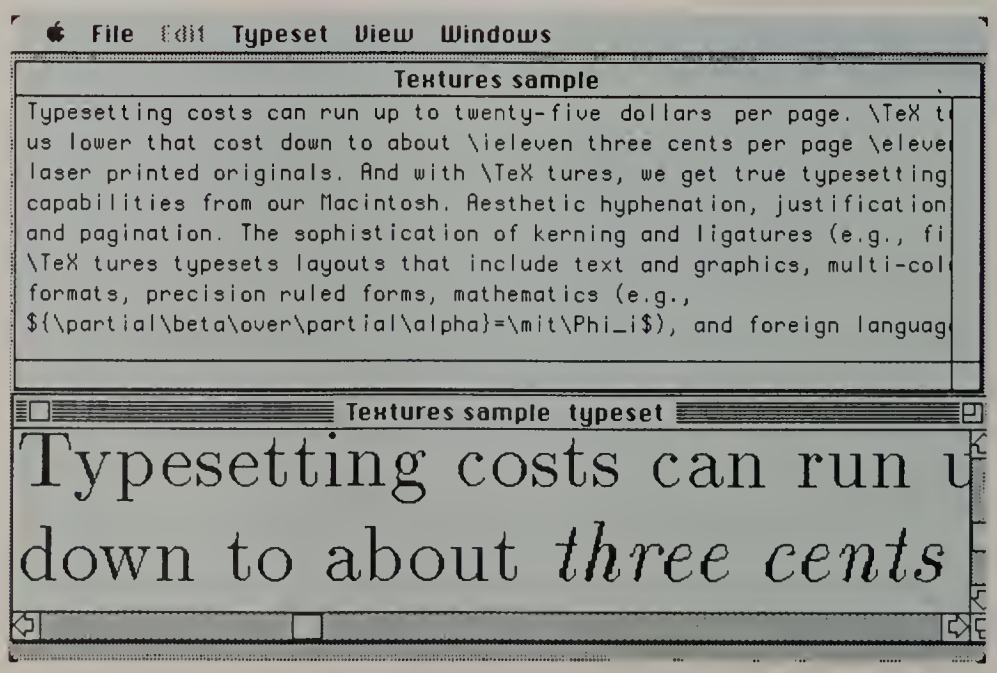
While *Textures* is better suited for producing voluminous documents and precision typesetting than interactive page-layout programs are, it is much more difficult to learn. For example, you have to use embedded codes to move a picture across a page instead of simply dragging it with a mouse.

Although a user manual was not available for this review, Addison-Wesley provided a brief preliminary guide and a copy of *The TeXbook,* Donald Knuth's 482-page manual for learning TeX. What's really needed, though, is a comprehensive collection of TeX document recipes and formats for those who like to learn by imitation.

In addition to the TeX application, the release version of *Textures* is expected to support many PostScript fonts (the prerelease version supports only three: PostScript's Times Roman and Helvetica fonts and TeX's own Computer Modern font).

Anyone willing to take the time to study the TeX language will undoubtedly benefit from *Textures'* ability to control the design and formatting of any document, from prose to poetry, and produce high-quality typesetting.–*Charles Bigelow*

See *Where to Buy* for product details.




***Take a Closer Look***
*The preview window on the bottom of this screen dump represents a 417 percent magnification of a typeset page. The source document appears above the preview window.*

# Armchair Conquistador

### *Strategic Conquest II*

***Strategy/war game.*** ***Pros:*** *Intense play; two players on one or two computers.* ***Cons:*** *Long playing time.* ***List price:*** *$59.95.* ***Requires:*** *512K.* ***Copy protection:*** *Key disk required for duration of game.*

For 15 days you've maneuvered your invasion force, consisting of five full transports of infantry, two aircraft carriers carrying fighter planes, and a battleship escort, into position for the assault. Your battleship pounds the city you've chosen to invade, sinking a destroyer in port. Your opponent picks up the red phone: "You'll pay for that, scoundrel!" You smugly reply, "Not too darn likely! I've come to collect!" You hang up the phone as four strategic bombers take off to cripple your enemy's production.

PBI Software has just released *Strategic Conquest II,* the multiplayer edition of the strategy war game *Strategic Conquest.* While the single-user version required that you play against the computer, *Strategic Conquest II* allows you to play against the computer or a human opponent, either on the same computer or via the AppleTalk network. The game offers digitized sounds and enhanced graphics and allows the players to type messages to one another.

**A Different World**

At the outset of the game, the program generates a random world map, which is initially blacked out. As you explore, World Map lets you view the entire known world, and City List names your cities and tells you what they are producing.

Rapid exploration and expansion is the key to success. Armies are the only land-based force and the only means of capturing a city. Fighter jets and bombers may move over land and water but may only refuel in friendly cities. Ships and subs, naturally, move on water, and you must produce them in a port city. Early in the game, mobility and economy are paramount. Initially, each player needs armies to take over cities and transports to move the armies across water. As the game develops, heavy pieces, such as battleships, become necessary.

At a certain point, conflict becomes unavoidable. Pieces may engage one another when they occupy an adjacent square. But offense is not necessarily the best defense—attacking pieces can be repelled or destroyed. Pieces with more than one unit of strength may also be damaged.

**The Longest Day**

A two-player game can easily run 16 hours, for as the game progresses, the size of your forces increases. Turns are measured in days, and each piece must be moved once a day, although the game does permit automatic moves.

Despite the long playing hours, *Strategic Conquest II* has a freshness every time you sit down to play that is not found in other games. Unlike games that use the same strategy repeatedly, *Strategic Conquest II* provides a different challenge in each skirmish.—*Otto Waldorf*

See *Where to Buy* for product details.

# References: Supplied upon Request

### *Professional Bibliographic System 2.56*
### *Biblio-Link Dialog 2.1*

***Bibliography creation system.*** ***Pros:*** *Versatile formatting and searching; file conversion from on-line databases.* ***Cons:*** *Limited print enhancements; a bit costly.* ***List price:*** *Professional Bibliographic System $295 (demo version $75); Biblio-Link Dialog, Biblio-Link BRS, and Biblio-Link MedLARS modules $195 each.* ***Requires:*** *128K.* ***Copy protection:*** *Two recoverable installations.*

If you compile bibliographies or catalogs, do research, or write for a living, two appealing products from Personal Bibliographic Software are worth investigating. With *Professional Bibliographic System (PBS)* you can create bibliographies, and with the desk acces-

sory *Biblio-Link* you can convert downloaded files from on-line services, such as Dialog and BRS, into *PBS* structure. Together, these programs take much of the drudgery out of assembling references.

*PBS* is particularly versatile, containing 20 different *workforms* that include standard bibliographic formats for books, periodicals, dissertations, and a good deal more. You can change workforms as often as necessary and add notes to every citation. Once you've completed your citations, you select what the bibliography will include, specifying the indentation, page numbering, and headings. *PBS* punctuates both printed and disk file versions through separate *punctuation files,* in bibliographic formats such as general scientific style or those recommended by the American National Standards Institute (ANSI), the Modern Language Association, and the American Psychological Association. And you can customize your own format with your own punctuation file.

*PBS* is generally easy to use, although menu placement of some operations (for example, creating a new text file and formatting data) is not always logical. On the other hand, data entry is straightforward, whether you're tabbing from field to field, moving among citations, or clicking buttons to store your data. The program punctuates as part of the output, thus saving time during data entry.

From the current data file you can print a bibliography that is a subset of the citations or print the file in its entirety. *PBS*'s powerful searching capabilities allow you to pinpoint the specifics that you want and to compile a bibliography with just those criteria. You can further define the format before printing, by designating whether such things as the note, the abstract, or index terms should be included.

### Supplying the Missing Link

If you use commercial on-line databases, the speedy *PBS-Biblio-Link* connection lets you easily convert downloaded files from Dialog, BRS, and MedLARS (a medical database) into *PBS* citation format. However, you must use your own communications program, and you must record the entire session, since *Biblio-Link* needs specific commands from the database service to perform its conversion.

The version of *PBS* I used had some shortcomings, such as its inability to use any fonts except Chicago and Geneva. A later release (version 2.6) reportedly allows you to use any font in your system. A related shortcoming is *PBS*'s limited editing capability; for print enhancements other than boldface, italics, or underlining, you must save your bibliography as a text file and edit and print it with a word processor.

### Good References

Remember that *PBS* is specialized and its universe is limited. Despite its searching and formatting versatility, it's not designed to be a general database manager. Its sophistication requires time spent studying the manual and tutorials, even if you're familiar with bibliographic terms and formats. But if you have a drawer full of index cards or disks full of downloaded research, that time and effort will be rewarded. And though the price is a bit steep, scholars, librarians, and bibliophiles will find *Professional Bibliographic System* to be an excellent tool for research.—*Jeremy Joan Hewes*

See *Where to Buy* for product details.

# Process Monitoring

***Parameter Manager*** *1.09*

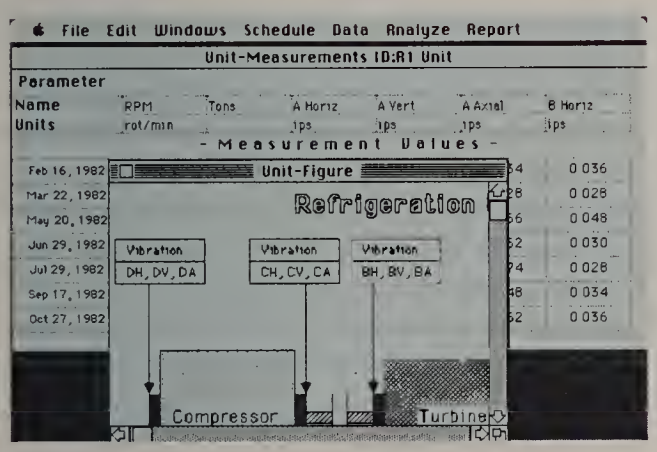
***A measurement and analysis system for time- or sample-dependent data.*** ***Pros:*** *Performs functions provided by no other Macintosh program. Provides the user with an integrated statistical, database, and graphics tool for technical data analysis.* ***Cons:*** *Cannot directly import spreadsheet data.* ***List price:*** *$495.* Parameter Manager Plus *$995.* ***Requires:*** *512K, external drive.* ***Copy protection:*** *None.*

*Parameter Manager* was originally intended as a tool for industrial process monitoring. Structural Measurements Systems, however, is now marketing it as a "technical data manager."

Basically a specialized spreadsheet with the added dimension of time, *Parameter Manager* is an integrated software tool that could be useful to anyone

who needs to collect, store, and analyze large amounts of time- or sample-based data.

*Parameter Manager* can track 64 variables for a virtually unlimited number of items, such as machines, experiments, or processes. The program maintains data in a basic spreadsheet format (see "Keeping Cool"). You can link additional information to this spreadsheet in the form of item parameters, such as the maximum allowed change in a variable; Item Notebook documents, which contain textual information about an item; expanded item descriptions; and imported *MacPaint* or *MacDraw* reference figures. *Parameter Manager* lets you set absolute or rate-of-change limits for each parameter. Whenever a measurement value exceeds the allowed condition limit, the program automatically alerts you.




***Keeping Cool***

Parameter Manager *at work: The spreadsheet shows records of vibration measurements made on a refrigeration unit. In the inset window, a schematic drawing provides instructions about precisely where measurements are to be taken.*

If you have *Parameter Manager Plus,* you can purchase the Remote Data Entry Option ($695), which lets you enter data from a remote modem, or PDC Interfaces ($995 to $1295), which accept data from portable data collectors.

### Scheduling

A schedule is used in any monitoring process to systematize data collection and analysis procedures. *Parameter Manager* excels in the creation of schedules for data collection. A schedule in *Parameter Manager* can be based upon one or more sets of criteria. Measurements can be requested at specific intervals on, before, or after specific dates. Measurements may also be scheduled according to criteria involving existing conditions. In addition to date- or frequency-oriented schedules, schedules can be arranged according to item identification numbers and item locations. Such schedules could form the basis for a route for performing data collection.

### Analysis

Besides providing a good overall picture, *Parameter Manager*'s analytical capabilities enable you to graph trends, forecast future values, and compare different parameters or items. In addition to graphically displaying trends, the program produces simple descriptive statistics and correlation matrix output. However, *Parameter Manager* is not a substitute for a good statistical analysis package such as *StatView 512+;* its procedures in data analysis are geared to analyzing time-, date-, or specimen-dependent data. If you're interested in the technical data analysis for statistical process control (SPC), *Parameter Manager Plus* includes an SPC module for producing x-bar charts, charts of individuals, p charts, c charts, range charts, moving range charts, np charts, and u charts.

### Reports

*Parameter Manager* generates management reports that can be used to document the contents of the database or to produce worksheets for manual data collection. Program options let you easily list such things as items that have exceeded the condition limits or parameters that have been "missed" (items that have undefined values for the previous or current measurement date).

You can search the Item-Notebook for specific item codes with which to generate reports, or produce end-of-period reports –analogous to operating logs showing the unprocessed data–that contain information on all the parameters with defined values (including all the measurements taken over a period of time).

On the whole, *Parameter Manager*'s versatile database and advanced reporting and analytical capabilities make the process of measuring and analyzing time- or sample-dependent data much easier. The program is well designed and implemented. For statistical process control or portable data collection applications, *Parameter Manager* is unique in the world of application software.–*Terry A. Ward*

See *Where to Buy* for product details.

# FileMaker's Form Improves

***FileMaker Plus*** *1.0*

***Database manager.*** ***Pros:*** *Straightforward form-design tools; eight files can be open simultaneously; reads and writes text, SYLK, and BASIC sequential files; lookup feature saves data entry time; scripts automate repetitive actions.* ***Cons:*** *Limited entry-checking features; accepts text data in number fields; no Windows menu for quick access of an open file's window.* ***List price:*** *$295.* ***Requires:*** *512K.* ***Copy protection:*** *None.*

Finding the right data management program isn't easy. Buy a complex program, and you may feel like you've bought a shotgun to kill flies; buy a simple filer, and you may outgrow it in a week. The latest version of Forethought's *FileMaker Plus* builds on its predecessor's excellent foundation (see *Macware Reviews, Macworld,* December 1985) and is positioned between simple filers like *Microsoft File* and *Record Holder,* and heavyweights like *dBase Mac* and *Omnis 3 Plus.*

### The Form's the Thing

*FileMaker Plus* retains the form-based structure of its forerunner. A set of layout tools and a precise, on-screen measuring system make it easy to design attractive forms containing graphics, lines, boxes, and any Mac font. You can create as many layouts per database as you need. Unlike *FileMaker, FileMaker Plus* also creates preset, unadorned form layouts for data entry and columnar reports; you can use these layouts as they are or as starting points for custom layouts. The newest version not only displays records in a columnar, spreadsheetlike format but lets you edit or add to the records in this format. *FileMaker Plus* offers the text, number, date, and calculated fields of its predecessor but also adds graphics fields.

One asset of *FileMaker Plus* can be a liability when it comes to form design. The program lacks a Save command; it automatically saves your data and forms to disk after 30 seconds of inactivity, which means you can't revert to a form's previous design after changing it. The remedy is simple: make a copy of the layout before altering it.

Unlike most file managers, *FileMaker Plus* indexes a data file on every field. This approach lets you locate data quickly, regardless of which field you're searching. By maintaining the indexes in memory (saving to disk only when available memory fills or the program is inactive), *FileMaker Plus* offers the fast sorts and searches that multiple indexes provide, without sacrificing data entry speed.

*FileMaker Plus* lets you open up to eight files at once—a big improvement over *FileMaker*'s one-file limit—but it lacks a Windows menu for quickly bringing a particular window to the top. You can avoid window shuffling by using Marsh Gosnell's $5 *Windows* desk accessory (available through user groups and on CompuServe).

Another significant new feature is the ability to automate frequently performed actions with scripts. A *FileMaker Plus* script can, for example, display a specific form, sort a database, or locate certain records and then print them.

### You Can Look It Up

*FileMaker Plus*'s multifile capability combines with its new lookup feature to provide capabilities similar to those of relational databases like *Reflex for the Mac* (formerly *Interlace*) and *dBase Mac*. For any field, you can tell *FileMaker Plus* to look up a value in a separate file. In an invoice application, you can type a value in a Part Number field, and *FileMaker Plus* will retrieve the item description and unit price from a separate file (see "Looking Up Data"). At first glance, *FileMaker Plus*'s lookup feature functions like a relational database, but it won't let you mix fields from different files on the same form, and data retrieved from one file is actually entered into the other. So if you update the information in one file, it won't be updated automatically in the other file.

### Not for the Error Prone

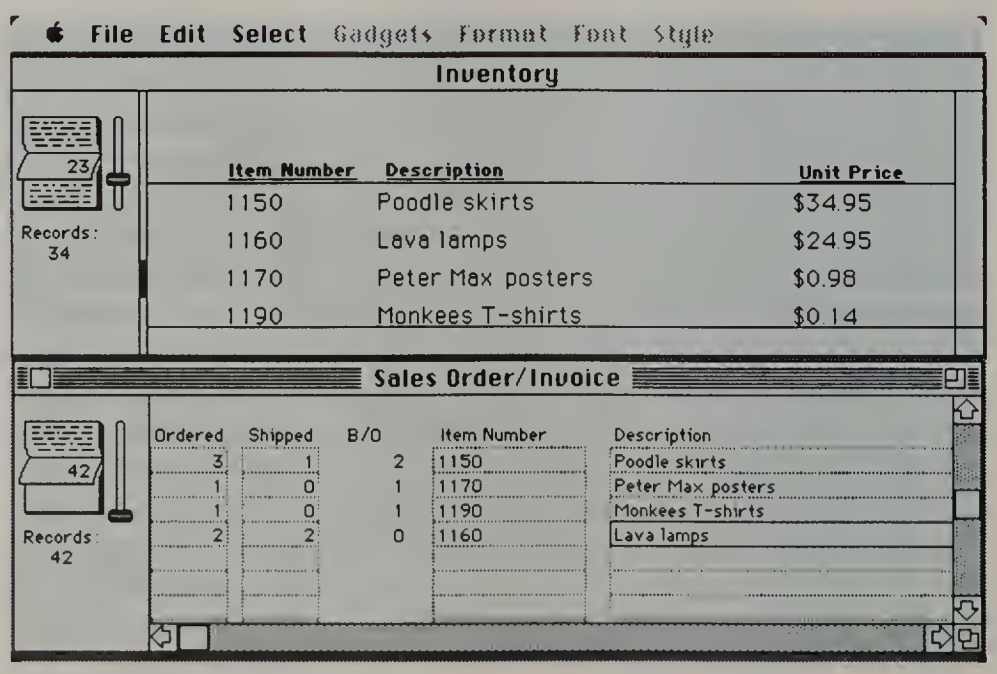
Despite the many pluses in *FileMaker Plus,* one failing dampened my enthusiasm: the lack of entry checking. You can specify that the program check an entry to make sure it does or does not exist elsewhere in a file, but that's all. You can't specify range checking, pattern matching, or field comparisons.

A more significant flaw exists in the original *FileMaker* as well. *FileMaker Plus* stores exactly what you type. Forethought's rationale behind this quirk is that some applications benefit from text in number fields. Perhaps so, but many applications require accurate numeric data for calculations. The best approach would be to make text entry in number fields an option that you could turn on or off.

Its casual approach to entry checking aside, *FileMaker Plus* is an excellent program. It retains the best traits of its ancestor—simple but effective form-design tools, good performance, data-sharing features, and a superb manual—while adding a lookup feature, scripts, and spreadsheet format display. Although its price has increased along with its skills, *FileMaker Plus* remains a good value. It's the program of choice for anyone who can do without the power (and the setup headaches) of a relational program but who has outgrown a simple filer—and types carefully.—*Jim Heid*

See *Where to Buy* for product details.

***Looking Up Data***
FileMaker Plus's *lookup feature lets the program automatically enter data from one file into another. Here,* FileMaker Plus *copied the contents of the Inventory file's Description field for each item number. The Inventory file appears here in list form.*




# Serving the Masses

### *3Server3*

***Network disk server.*** ***Pros:*** *Reliable, with extremely well-designed tape backup and functional LaserWriter spooler; shared access from IBM or compatible PCs on Ethernet and Macintoshes on AppleTalk.* ***Cons:*** *Can't link volumes from within applications; primitive file transfer between Mac and IBM partitions; PC users can't see Mac files.* ***List price:*** *3Server3 $5995; Tape Backup $1995.* ***Requires:*** *128K, 512K, or Macintosh Plus.*

Improperly designed network storage can be the source of interminable delays. The 3Server3, an AppleTalk/Ethernet disk server, takes the snarl out of network bottlenecks with shared storage and a tape backup option designed specifically for network use.

The 3Server3, a completely redesigned version of 3Com's 3Server, is a self-contained network computer that contains a 70-megabyte hard disk drive, an 8-megahertz 80186 processor, and an Ethernet network processor. You can install a separate tape-backup unit and attach up to twelve 70MB hard disk drives.

Although setting up for this review required attaching an IBM or compatible PC to the 3Server3's Ethernet port, 3Com's new *EtherSeries* version 2.6 software lets you set up the 3Server3 from a Mac. Installing the AppleTalk user software is straightforward—it involves no more than copying two applications, Manager and Mac-to-PC, onto a disk for each Mac user. I had no problem running the 3Com software from a floppy disk, Apple's Hard Disk 20, or SuperMac Technology's DataFrame.

Gaining access to the 3Server3 is somewhat like logging on to a multiuser mini or mainframe. Fortunately, you can create a command document that will automatically log in the user, link up to four preselected volumes at a time, and start up an application. Unfortunately, you cannot link volumes from within an application. Once you quit the Manager, the linked volumes appear on the desktop just as if they were floppies.

The volumes I created with System 3.2 and Finder 5.3 were HFS compatible. I had no problem saving to folders from

FRED STIMSON

within applications or from the desktop. Although I was unable to time the 3Server3, I did time the older 3Server and found it could save a 64K *MacWrite* document about 20 percent faster than *MacServe* with an AST-4000. According to 3Com, the 3Server3 is capable of even better performance with a faster AppleTalk network.

As with other disk servers, you allocate space on the server's disk by creating fixed-size volumes. 3Com's Manager application lets you specify the volume size but won't let you resize a volume after you've created it. Instead, you must create a new volume and copy the original volume's contents into it.

When you create a volume, you assign it access rights: a private volume is accessible by only one user at a time; a public volume can be read by multiple users but can be modified by only one; and a shared volume can be modified by many users simultaneously.

### A Link to Ethernet

The 3Server3 provides the ability to connect both Ethernet- and AppleTalk-networked computers, but it's not a gateway; though you can access other 3Server3s via Ethernet, you can't communicate with a Mac on a remote AppleTalk. Unlike Kinetic's FastPath, the 3Server3 doesn't let Mac users send AppleTalk messages over Ethernet—3Com uses the XNS protocols in place of AppleTalk. However, AppleTalk users can transfer files to and from PC user volumes with a separate application, Mac/MS-DOS.

Documents transferred by Mac/MS-DOS are transferred without any translation. To share formatted data files, PC and Mac users must run applications that read common file formats, such as *Excel* and Lotus's *1-2-3*.

Although Mac/MS-DOS transfers PC and Mac documents flawlessly, PC users cannot see Mac documents, and Mac users see an MS-DOS-type directory. Furthermore, PC users cannot initiate file transfers.

### Spooling Lasers

The 3Server3's ability to spool LaserWriter documents can save time for desktop publishers. Because multiple documents can be queued up on the 3Server3's disk in less time than it takes to print them, users no longer have to wait for printing to finish before resuming work on the Mac.

The 3Server3's spooler prints bit-mapped images (*MacPaint* documents), object-oriented images (*MacDraw* documents), and Aldus's *PageMaker* (version 1.02) documents without a hitch. PC users must run a separate program, Script.exe, to print text files. Only PC programs that can output PostScript files can print directly to the spooler.

I experienced one problem with the spooler. Because the LaserWriter isn't connected to AppleTalk, users cannot receive any error messages it might send. For example, while a file was printing, I was unaware that the LaserWriter had run out of paper.

### Automated Protection

With the 3Server3 tape backup, you can copy and restore the entire disk onto/from a 60MB tape cartridge, or you can back up only what's been changed since the last backup. (I was able to back up 20 megabytes in just under 20 minutes.) 3Server3 lets you schedule automatic backups at specific times, but you cannot access the server while the backup is in progress.

The backup software I tested required a PC, or a Mac connected to the serial port, to control the backup. 3Com's *EtherSeries* 2.6 allows you to control the backup operation from a Mac on the network.

### Storage to Remember

The 3Server3 is an ideal choice for those who can't afford to lose data. While the 3Server3 lacks a transparent PC-to-Mac interface and carries a rather steep price for a hard disk, it offers LaserWriter spooling and automatic tape backup in addition to the disk server—a combination that neither *MacServe* nor *TOPS* can currently match.

This spring, 3Com expects to offer Mac users the *3Plus* software that runs on PCs. With the arrival of *3Plus,* the 3Server3 will provide true file service, an extensive electronic mail service, and remote network capabilities.—*David Ushijima*

See *Where to Buy* for product details.

# Technical Writing Anyone?

***MacEqn*** 1.9

***Equation processor desk accessory. Pros:*** *Works within any application; creates PICT files; prints in high resolution.* ***Cons:*** *Complete editing of equations is not possible.* ***List price:*** *$44.95.* ***Requires:*** *128K.* ***Copy protection:*** *None.*

Until recently, academicians relied on dedicated word processors such as NBI and Wang to document equations, formulas, and mathematical notations. But you had to print the document to proof the equations, since the notations were not displayed on the

$$P_{pair}(E) = \int_0^{E_{max}} \phi_{pair}(E,E')\,dE' = 4\alpha\frac{N}{A}\mathcal{I}(\mathcal{I}+1)\,r_e^2\left[\frac{7}{9}\ln\frac{2E}{m_e c^2} - \frac{109}{54}\right]\left[1 + 0.12\left\{\frac{\mathcal{I}}{82}\right\}^2\right]^{-1}$$

***A Sample Equation***
*This equation shows the probability of certain atomic interactions.*

computer screen. With the *MacEqn* desk accessory, you can write highly complex equations that include integrals, summations, products, multilevel super- and subscripts, and arrays. The program allows partial editing of equations and displays matrices of up to 7 by 7. This $44.95 (as low as $6 if site licensed) desk accessory occupies only 19K in the System file. In future versions the developer plans to decrease the size by about 3K.

### Making It Work

The *MacEqn* distribution disk includes a Font/DA Mover and laser fonts. *MacEqn* won't function properly unless you've installed the symbol font from the distribution disk in the System file; to ensure the legibility of your equations on screen, install at least 9-point, 12-point, and 24-point fonts; include 18-point if you use the ImageWriter.

When opened from the Apple menu, *MacEqn* adds a new menu option, Eqn, to the existing menu bar. Under Eqn appear the options Integral, Sum, Product, SuperSub, CntrdSupSub, Fraction, Root, Over, and Refresh (see "Symbol Equivalents"). Also included are the font selections and styles, and each option has its own ⌘-key equivalent. Edit key commands are also supported. You'll need to read the well-written manual to create the equations.

### Building the Equation

*MacEqn* is not a simple draw-type program in which you select symbols and characters from a palette and position them on screen. Instead, you generate formulas much as you would in a word processing program. Selecting a symbol such as an integral sign initiates a multistep process. First, the integral sign appears and the cursor drops below it to let you enter the lower limit of integration. Pressing the Enter key terminates this step, and the cursor moves above the integral sign for the upper limit of integration. The program allows a maximum of 256 characters and 16 nested levels of function in an equation.

The bottom of the screen displays the symbol type being generated, the font size, the style, and the function level. Sizes of symbols and characters adjust to accommodate any expression, including integrals, fractions, matrices, and so forth (see "A Sample Equation").

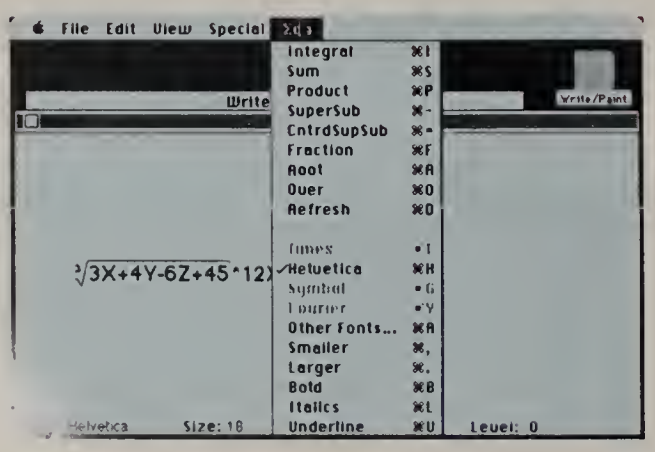
The completed *MacEqn* formula is cut and pasted into the document via the Clipboard. With *Microsoft Word* you can create glossaries of common formulas and insert them into a document later with a single keystroke.

### The Finished Equation

*MacEqn* stores equations in PICT format, which allows additional editing in *MacDraw* and also provides maximum resolution when printed with the LaserWriter. For printing on an ImageWriter, try Helvetica or Geneva.

You can copy a *MacEqn* equation out of a document and paste it back into *MacEqn*. Editing capabilities include insertions, deletions, and repositioning (with the cursor keys on the Macintosh Plus). Not all of the information used to create a *MacEqn* equation stays with the finished equation, so modifications of an existing formula may not be successful. *MacEqn* is a welcome and exciting new tool for the scientific and engineering communities.
*—Edwin Haskell and Prasad Kaipa*

See *Where to Buy* for product details.




***Symbol Equivalents***
*MacEqn provides its own menu with keyboard commands and a window in which you can create your equation.*

# The Test of Time

***measureUP*** 1.0d

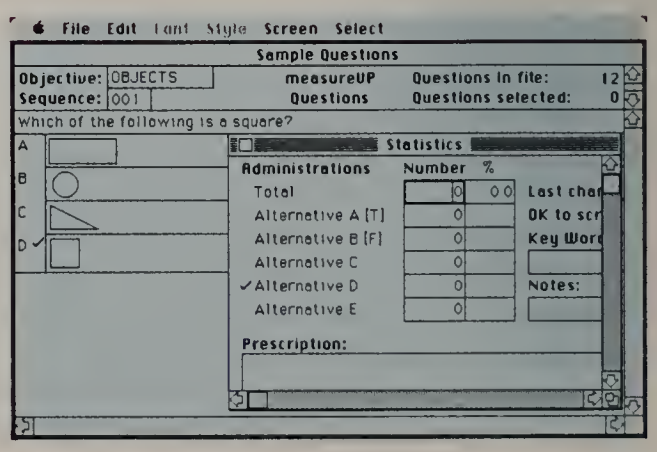
***A test-generating tool. Pros:*** *Excellent implementation of graphics; good use of Mac interface.* ***Cons:*** *Very pricey; no test banks available; no support for divisions in test layout.* ***List price:*** *$349.* ***Requires:*** *512K.* ***Copy protection:*** *Key disk.*

Logic eXtention Resources' *measureUP* is a time-saving tool designed to help educators create tests for their students and then reconstruct those tests for future use. The program's graphics capabilities enhance the testing formats and provide a broader scope for test questions. The program consists of two primary modules: *measureUP* Questions and *measureUP* Design. The program enables you to develop a database of questions (free form, true/false, and multiple choice), from which you choose individual questions to construct a test and then create a test layout with the *measureUP* Design module. You can easily switch between the two.

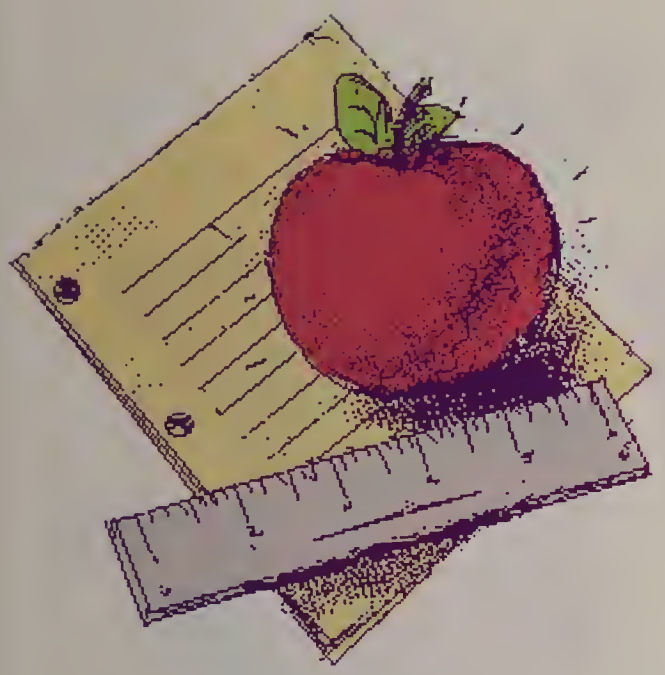
### A Flexible Testing Device

A *measureUP* question is composed of information in up to six horizontal boxes and one vertical box (called the answer box). The first horizontal box, in which the question is stated, is called the stem. The other horizontal boxes are the question alternatives (see "Questions and Answers").

Designing a test is very quick and easy. With the Design module, accessed from the File menu, select from the Questions File window and transfer to the Test Design window. Questions can be inserted into the test as you build it.




***Questions and Answers***
*The* measureUP *Questions screen includes the question stem, alternatives, and the answer box.*



The program also provides a Statistics window for tracking student responses. You can print up to ten different versions of a test, as well as a scoring key. And *measureUP* can randomly arrange alternatives of test questions.

The program fully supports importing and exporting of information. It exports test questions in *measureUP, MailMerge,* the Clipboard, and text formats, and it imports files such as statistics information in *measureUP* or *MailMerge* formats. You can select individual question components to export to other programs.

### An A for Graphics

The feature that most distinguishes *measureUP* from its competitors is its ability to handle graphics very much like a desktop publishing program. You can paste a picture into the question stem or alternatives and drag it anywhere. You can also scale pictures from 1 percent to 300 percent and trim any portion of a picture that is outside the picture box.

### Measuring Up

Even though *measureUP* makes question entry easy, it takes dedication to create a substantial database of questions. The product would be more valuable if question databases from educators and publishers were made available, but currently, the company has no plans to provide this service. The testing module also lacks the ability to create different instructions for each section of the test.

Overall, *measureUP*'s many worthwhile features outweigh the problems. The documentation is comprehensive and easy to read, and although there's no index, the table of contents is detailed enough to help you locate the material you need.

*measureUP* is a time-saver and a significant step forward in educational testing, although at $349, the price of improvement is high. For those not put off by its cost, however, *measureUP* is the best educational testing tool on the market.—*David Kater*

See *Where to Buy* for product details.

# Highfalutin Hyphenation

***Mac-Hy-phen*** *1.0*

***Hyphenation desk accessory. Pros:*** *Relatively fast; easy to use; works with* Microsoft Word, PageMaker, *and* MacPublisher I *and* II. ***Cons:*** *Eliminates text and font formatting; noneditable dictionary; limited prefix and suffix hyphenation; incompatible with* MacWrite. ***List price:*** *$125.* ***Requires:*** *512K.* ***Copy protection:*** *None.*

The newest text and page-layout aid from Boston Software Publishers is *Mac-Hy-phen,* a program that adds conditional, or "soft," hyphens to text files. Like many other utilities, it operates as a desk accessory and must be installed in the Apple menu. You open it from within a word processor or page-layout program, then hide or close its window when it's not in use.

*Mac-Hy-phen* works with text files created by *Microsoft Word,* Aldus's *PageMaker,* and Boston Software's *MacPublisher I* and *MacPublisher II.* If you use *MacWrite* to create your text files, *Mac-Hy-phen* shows the placement of hyphens, but they are not retained when you return to your document, since *MacWrite* cannot recognize them.

*Mac-Hy-phen* consists of a desk accessory, which occupies about 10K of space, and a 230K dictionary of hyphenated words. With a 512K Mac, the dictionary must be in a second disk drive when you use *Mac-Hy-phen*—a problem you don't encounter with a 512E or a Mac Plus. Unfortunately, you can't edit or customize the dictionary, though the manual promises the "eventual" availability of these options.

### Seen and Not Seen

*Mac-Hy-phen* is easy to use and fairly quick (a 15K document took about 3 minutes to hyphenate), considering that it compares your text with its 230K dictionary and inserts a special character at each hyphenation point. To use it with any of the four programs, you first select and copy to the Clipboard the text to be hyphenated. You then select *Mac-Hy-phen* from the Apple menu, open the dictionary, and paste the text into *Mac-Hy-phen*'s window. When you click on the Hyphenate button, the program searches its dictionary and inserts a nondisplaying character (ASCII 31) at each acceptable division point. Once the process is completed, you pull down the Edit menu and choose Copy to bring the text back to the Clipboard. Returning to your application, you paste your newly hyphenated text into the previous (still-highlighted) version, which is then replaced.

*Word, MacPublisher,* and *PageMaker* all recognize ASCII 31 as a conditional hyphen. The hyphen replaces the special ASCII character for end-of-line words and hyphenates them when they're wrapped. The hyphens appear on the screen and in the printed text, while all other conditional hyphens remain hidden. (In *Microsoft Word,* you can display them on screen with the Show Paragraphs command.)

You can use *Mac-Hy-phen* to hyphenate a single word, a few lines, or an entire file. If you have previously formatted your text, however, the hyphenation process will remove the formatting and the typeface as well. Consequently, you should first create and edit your text and then add conditional hyphens before formatting text.

### Flexible Formatting

*Mac-Hy-phen* adds conditional hyphens to the entire text you designate, not just at line endings in the current version. So, even if you reformat the text endlessly, changing margins or column widths, any words with conditional hyphens will break at the end of a too-long line. Words without conditional hyphens will wrap without dividing. If you've edited the text after adding conditional hyphens, though, you'll have to run *Mac-Hy-phen* on the revisions (or the whole document) to make sure that all possible word breaks are recognized when the text is formatted or reformatted.

This is a test. This is not a real emergency. If this were a real emergency, you would be instructed to turn to a more important radio station on your dial. This is an unimportant radio station, but we are nonetheless required to comply with the Federal Communications Commission's requirements that we broadcast these tests of the emergency signal. Thank you for your attention.

This is a test. This is not a real emergency. If this were a real emergency, you would be instructed to turn to a more important radio station on your dial. This is an unimportant radio station, but we are nonetheless required to comply with the Federal Communications Commission's requirements that we broadcast these tests of the emergency signal. Thank you for your attention.

***With Hyphens***

*By hyphenating narrow-column text, you reduce the ragged effect of the right margin and also cut a line of text.*

### Playing by the Rules

*Mac-Hy-phen* won't divide syllables of fewer than three letters at the beginning or end of a word, eliminating many logical word breaks. In addition, *Mac-Hy-phen* only recognizes words in the form in which they appear in its dictionary; for example, if you add the suffix "ize" to "conceptual," *Mac-Hy-phen* will not show the suffix as a separate syllable.

### Its Desktop Corner

As of this writing, *Mac-Hy-phen* is the only available program of its kind for the Mac. Therefore, despite its lack of an editable dictionary, its refusal to recognize suffixes, and its inability to retain text formatting, *Mac-Hy-phen* has earned a place on the desktops of Macintosh users—especially for narrow-column text (see "With Hyphens")—to smooth choppy ragged-right margins and to evenly space justified text. If you're a desktop publisher who doesn't fancy eyeballing your layouts and thumbing through the dictionary for proper word breaks, *Mac-Hy-phen* could be the utility for you.—*Jeremy Joan Hewes*

See *Where to Buy* for product details.

# Tile Away the Hours

***Shanghai** prerelease*

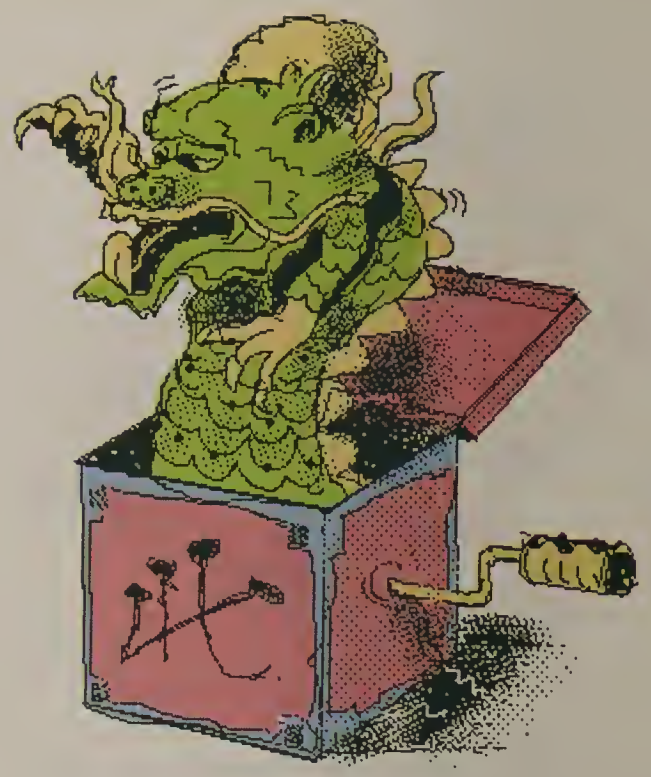
***Strategy game. Pros:** Very engaging; requires little learning time. **Cons:** Can be habit-forming. **List price:** Version 1.0 $44.95. **Requires:** 128K. **Copy protection:** Not copyable.*

Activision's *Shanghai* is a simple but surprisingly addictive game. Although it displays tiles adorned with Chinese characters, *Shanghai* is not a computer version of mah-jongg. Rather, it is reminiscent of games like solitaire, Concentration, and dominoes.

### Piles of Tiles

Your starting layout—called a dragon—consists of 144 tiles, stacked in eight rows, up to five deep. A tile's border indicates which layer it occupies: the thickest border represents the top of the stack; the thinnest represents tiles on the bottom layer. The program randomly generates a new dragon for each game. As with solitaire, it's not always possible to win a randomly dealt game of *Shanghai*. If you find the random dragon too frustrating, you can choose one of 18 predefined dragons that *Shanghai*'s author assures us can be won.

The object is to find matching tiles that are not blocked, or covered by other tiles, and remove them from the dragon until no tiles are left (or until you get stuck). Because many of the tiles are marked with Chinese characters, just locating matches can be a challenge until the patterns become familiar.

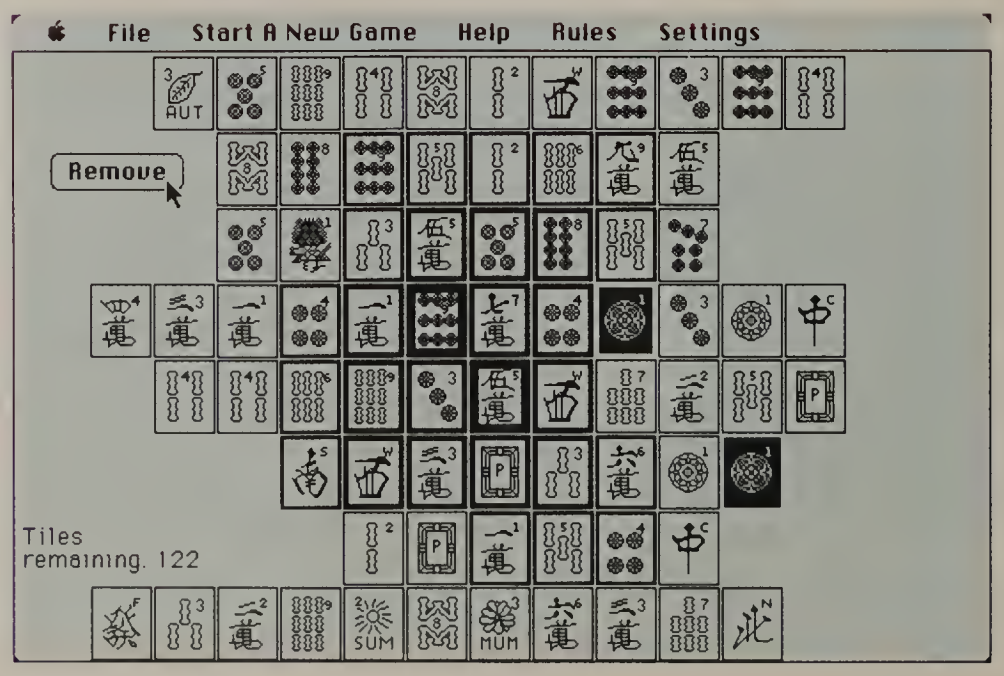


### Playing Options

You can play *Shanghai* alone or with several players who remove tiles from the same dragon or from separate but identical dragons. You can impose time limits for each move or allow unrestricted play. You can also play challenge matches in which two players take turns playing the same dragon, against each other and against the clock. The program lets you save games in progress.

You can start a game over with the same dragon, back up a move, ask to see all possible moves, peek at what's hidden beneath a tile, or seek help on rules and strategy. Although it's disappointing to spend a half hour matching tiles only to reach a dead end, I found I could win often enough to keep from getting too frustrated. And because the game generates a new dragon within seconds, I frequently found myself sticking around for "just one more game." —*Rusel DeMaria*

See *Where to Buy* for product details.




***Enter the Dragon***
*Winning Activision's* Shanghai *requires strategy as well as concentration, as you attempt to find matching pairs in a pyramid of 144 tiles.*

# Letraset Understands Design... LetraPage™ Delivers It!

For 25 years, Letraset has supplied professional artists and designers with creative tools. That experience is the heart of a new software package for the Macintosh computer. Effective communication is still a challenge. But now there's a program that offers professional solutions.

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It's one thing to design and produce printed material. But it's another to get it read. The solution is extensive choice and the power to explore it creatively. That's why LetraPage has more design options than any other program currently available.

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The LetraPage Graphics Palette offers a unique design vocabulary to add attention getting touches to your work. Nothing else comes close.

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- A 93,000 word hyphenation dictionary combines with letter-spaced justification to produce smooth, even text.

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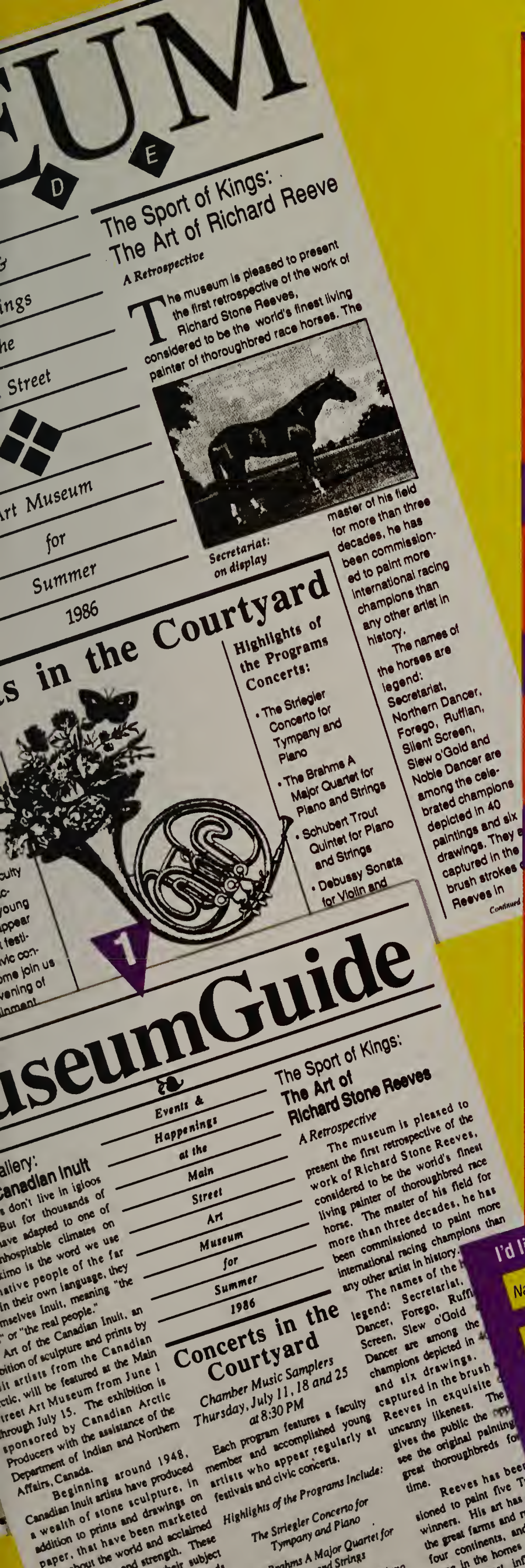
- The options also include document lengths over 1000 pages and grids up to 48 equal columns.




# LetraPage Supports Your Skills and Expands with Them.

LetraPage rewards the regular user with many levels of creative control and productivity. More sophisticated graphics are possible; more complex publications and documents can be produced. These examples show what we mean:

**$495.00**

**1** Tight letter spacing – achieved with LetraPage kerning – gives the masthead its impact.

- LetraPage's hyphenation and justification smooths out the text for a clean even appearance.
- Text is turned into illustration by centering a sentence and using the Picture Spec Sheet to duplicate the rules quickly and easily.

**2** LetraPage offers up to 48 columns per page – so a 6 column grid was chosen to add visual interest.

- The masthead gets added drama with a LetraPage custom size – 127 point!
- An original drawing was scanned in, then precisely sized with LetraPage's unique percentage scaling.

**3** A visual counterpoint to the large type was created by producing reverse letters on the diamond shapes.

- Vertical rules from the tool box were drawn directly on the layout to give the "Concerts" article a subtle style of its own.
- LetraPage's cropping tool eliminated unwanted detail from the illustration of the horse.

There's a lot more to LetraPage. Like built-in telecommunications, color capabilities for the ImageWriter II and a save page to disk feature. Contact your Authorized Apple Dealer and ask for a demonstration. **Or call us at 1-800-255-2550.** We'll tell you the name of your nearest dealer and send you more information.

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## ...and Saves Pages

Since LetraHyphen uses space more economically, the number of pages required for the same amount of text can be reduced. You save money by using less paper.

*LetraHyphen is for use with MacPublisher II, Microsoft Word, PageMaker and any other Macintosh word processing or desktop publishing program which supports discretionary hyphenation.*

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LetraIndex is also useful throughout the creation of the document. Draft indexes may be prepared at any time to assist editing. Word counts for the entire document can be generated quickly. LetraPage can also re-number the index if page numbers change.

*LetraIndex is compatible with MacWrite2.2, disk-based MacWrite (4.5–on) and Microsoft Word.*

COMMUNICATION *by Design*

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# MACWORLD
# 1986 Annual Index

***by Erfert Nielson***

This index covers the 12 issues of *Macworld* published during 1986. In a departure from our previous indexes, we've listed most products alphabetically as well as under appropriate subject headings. For example, *DiskInfo* is listed under its own name and under Desk accessories, Hard disks, Public domain, and Utilities. Boldface page numbers indicate a reference to a review (r) or a feature-length article.


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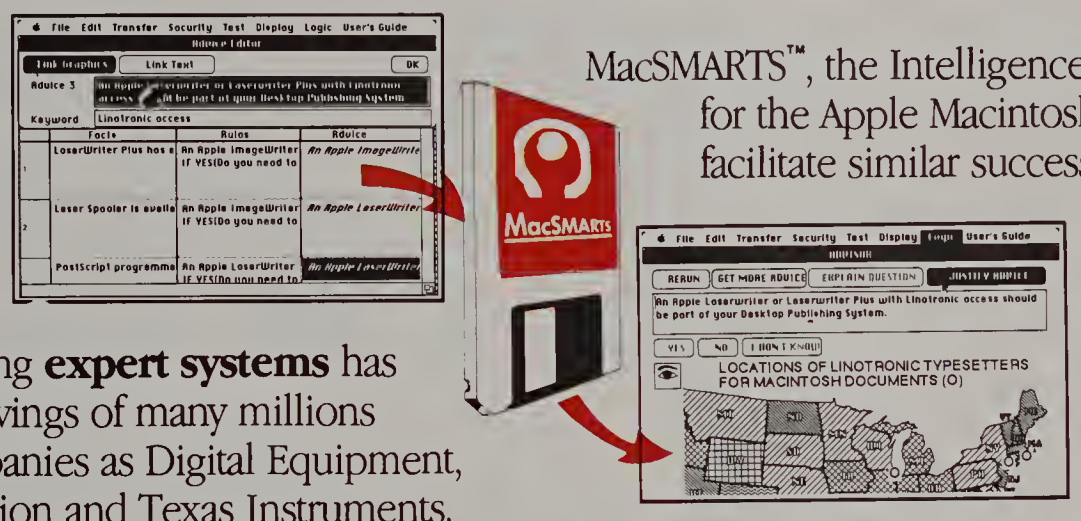


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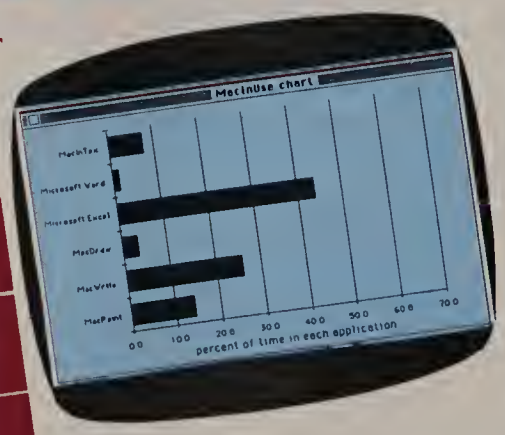


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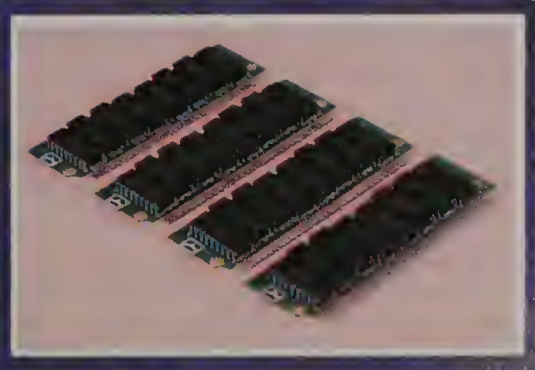

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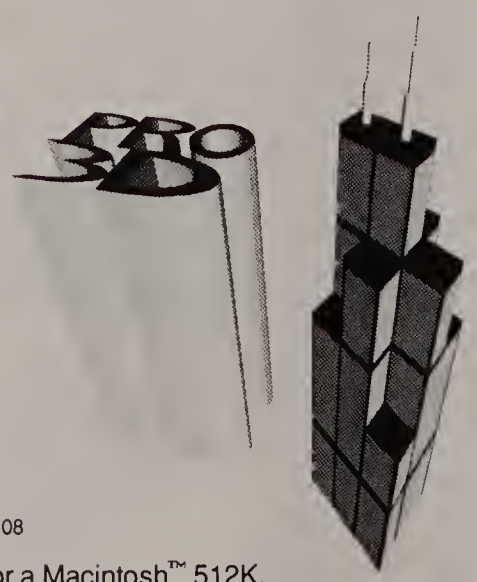

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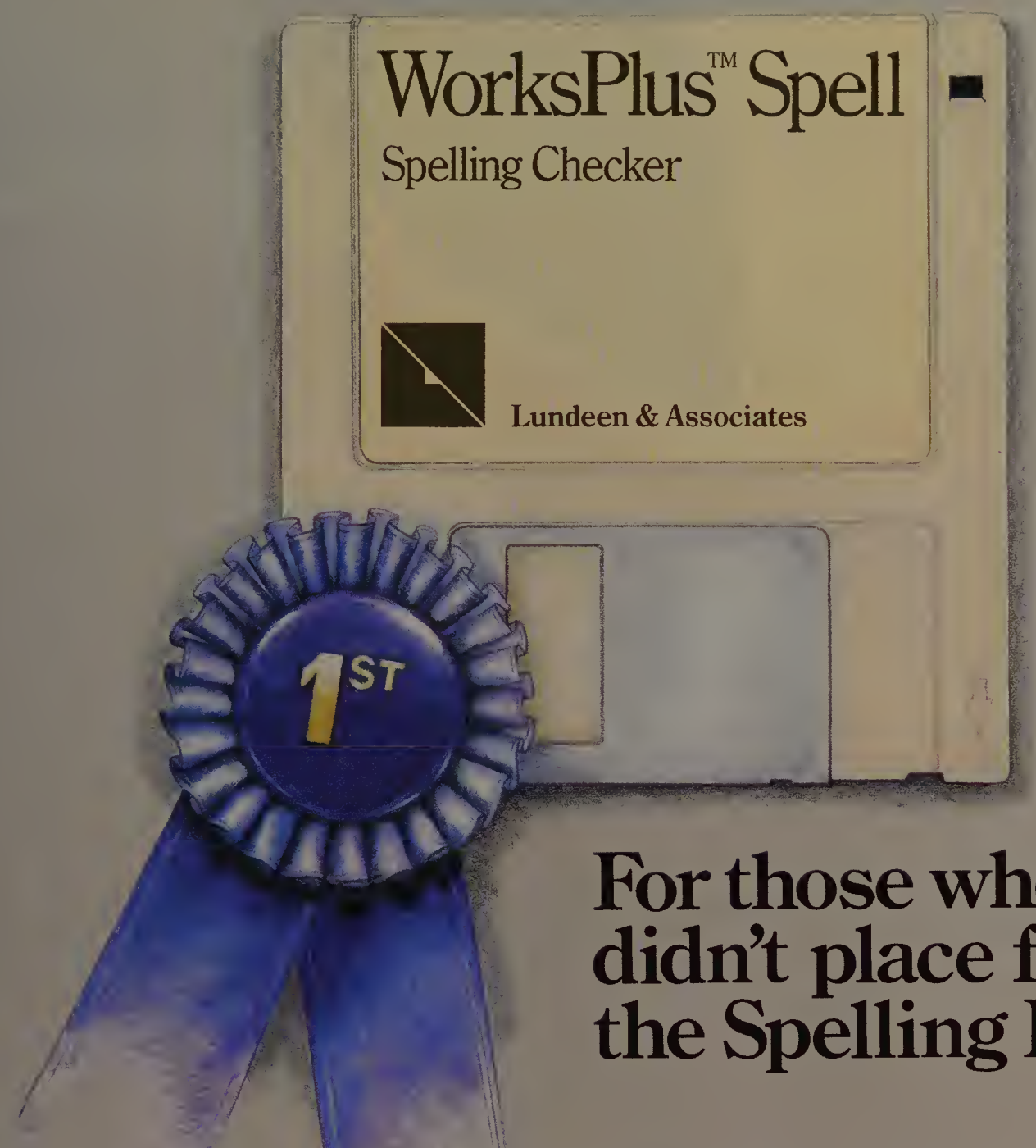


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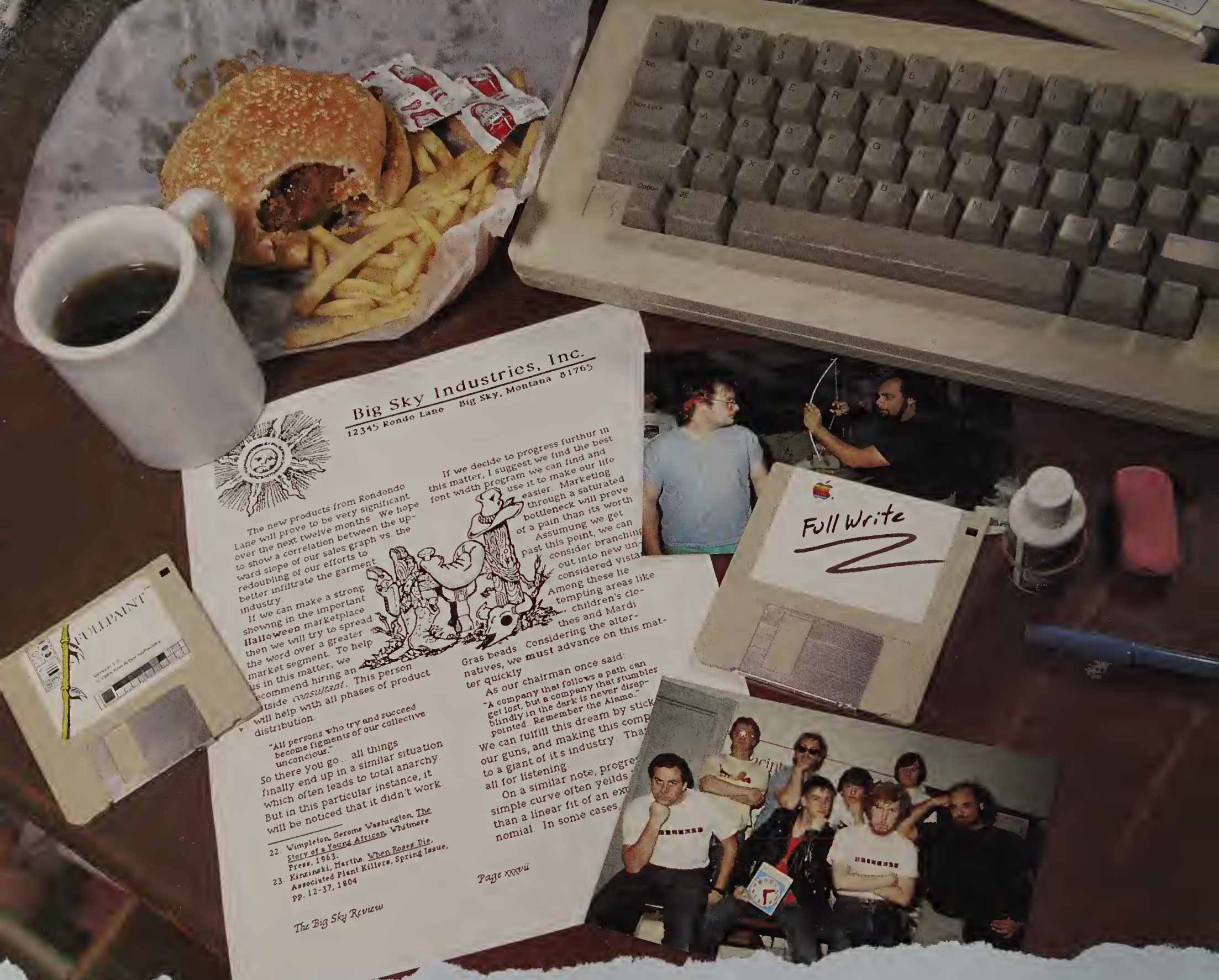


# FOR YOUR EYES ONLY . . .

**Subject:** FullWrite™
**Code Name:** Ozone

For the past year, a small but dedicated group of crack programmers at Ann Arbor Softworks, Inc. has been hard at work on a top secret project. Our agent was able to snap the attached photograph of one of their workstations before being discovered and subsequently disassembled and recompiled. As you can see, the project appears to be a third generation document processor and is expected to obsolete all existing text based products. Rumor has it that a sneak preview will be available at the January MacWorld Exposition in San Francisco. All field agents are advised to proceed with caution to booth #911.

M2


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# Quick Tips

## *Answers to your questions*

***by Lon Poole***

In August, I incorrectly advised readers that some of the keys on the Mac Plus keyboard don't work properly on a 512K Mac that hasn't been upgraded with the 128K ROM. David Dunham, author of the desk accessories *DiskInfo* and *Acta,* wrote to say that it's the System file version that matters; the Mac Plus keyboard works fine with the old 64K ROM, provided you use System file version 3.1.1 or a later version. "There are plenty of good reasons to get the 128K ROM and double-sided disks, but compatibility with the Macintosh Plus keyboard is not among them," he remarks.

Several people have written about typographical errors in the instructions given in August for attaching an ImageWriter to an IBM PC. Thomas Kennedy, of New York City, notes that the connecting cable for an original ImageWriter does not require female DB-25 connectors at both ends, as I said, but a male DB-25 connector at the printer end and a female DB-25 connector at the PC end. The connecting cable for an ImageWriter II requires a male mini-8 connector. See "Making Connections" for the correct wiring of both models' cables.

Sheri L. Richardson, a support technician for Haba Systems, has found that the settings I listed for the switches under the ImageWriter's front cover may result in "printing difficulties" on an original ImageWriter. "Such challenges may be avoided by closing switch SW1-5 as well as SW1-6," she says. She also observes that the ImageWriter doesn't recognize new switch settings unless you turn it off and back on.

| PC | ImageWriter | PC | ImageWriter II |
|---|---|---|---|
| 1 | 1 | 1 | – |
| 2 | 3 | 2 | 5 |
| 3 | 2 | 3 | 3 |
| 5 | 4 | 5* | 1 |
| 6 | 20 | 6* | 1 |
| 7 | 7 | 7 | 4** |
| 8 | – | 8* | 1 |
| 20 | – | 20 | 2 |
| | | – | 8** |

*Wired together at DB-25.
**Wired together at mini-circular 8.

***Making Connections***

*Since the ImageWriter II uses a different cable than the ImageWriter to connect to an IBM PC, its pins must be wired differently, according to Apple's specifications for the DB-25 connector.*

### Q Determining Version Numbers

How do you determine the version numbers of the System, the Finder, and so forth?

*David L. Pyle*
*Freeport, Texas*

A Most application programs, including the Finder and Macintosh Pascal, report their version numbers along with other information when you choose About (program name) from the Apple menu. Recent versions of the Control Panel, the Chooser, and some other desk accessories display their version numbers in very small print in the windows that appear when you choose them. Similarly, recent versions of the ImageWriter and LaserWriter files show their version numbers in the dialog boxes that appear when you choose Print or Page Setup from any application program. If none of these methods work, try selecting the file's icon, choosing Get Info from the Finder's File menu, and checking the comments in the dialog box that appears.

As a last resort, you can do some detective work using Apple's *ResEdit* program: the version number may be stored as a type STR resource. For example, the System file version is noted in the STR resource by ID = 0. You can get a copy of *ResEdit* from user groups such as BMUG, 1442A Walnut St. #62, Berkeley, CA 94709; from GEnie's MacPro roundtable, file number 83, with documentation in file number 76; and from the Apple Programmer's and Developer's Association, 290 S.W. 43rd St., Renton, WA 98055, 206/251-6548).

### Q Backing Up Desk Accessory Files

I understand the concept of backing up data, and I do it religiously. But how do you back up data that is on the Apple menu? I had two years' worth of projected data on a calendar, and one day it just disappeared from my Hard Disk 20.

*Maxwell J. Richards*
*Smithtown, New York*

A Desk accessories listed in the Apple menu store information in disk files the same way regular application programs do. The desk accessory files will be backed up along with everything else if you back up your whole hard disk at once using a program like *HD Backup* ($49.95 from PBI Software, 1111 Triton Dr., Foster City, CA 94404, 415/379-8765). Similarly, if you use such a program to back up only the files that have changed since the last backup and you have changed information in a desk accessory file, that file will be backed up automatically.

In order to back up desk accessory files individually, you must know their names and locations. The Scrapbook, for example, uses a file named Scrapbook File in the System Folder. File names often resemble the names of the desk accessories that use them, and the files are often located in the System Folder. Check the desk accessory documentation or call the publisher if you're not sure.

*(continues)*

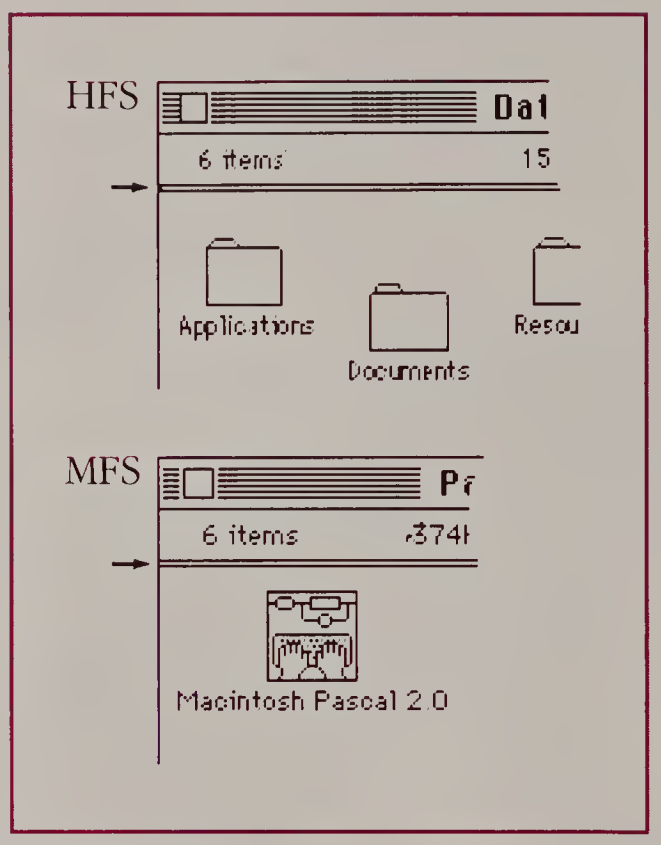
**Folder Trouble**

Help! Two problems are driving me nuts. I am using a MacBottom 10 with HFS on my Mac 512K that has not been upgraded. Although I am supposed to be able to save to a particular folder, my system lists everything by document. How can I get folders outside the Finder? And recently, new folders I've created inside other folders have been renamed Unnamed #1, Unnamed #2, and so on, and moved to the main disk window the next time I quit an application. What am I doing wrong and how can I fix it?

*Helen Phillips*
*Arvada, Colorado*

A From the screen dumps you included with your letter, it's clear your MacBottom is not using HFS. If it were, you would see a tiny dot at the left edge of the disk and folder windows, between the parallel lines located ¼-inch below the title bar of the window. "The Telltale Spot" shows the difference between an HFS disk window and an MFS disk window. To use HFS on a Mac 512K with the original 64K ROM, the System Folder on your start-up disk must contain the Hard Disk 20 file. Be sure you have the latest versions of it, the System file, and the Finder: 1.1, 3.2, and 5.3, respectively, as of fall 1986. All these items are available in one product, the Macintosh System Software Update ($15 from Apple dealers), and you may be able to get them from user groups. After installing the HD 20 file, you'll have to completely back up your MacBottom using the HFS Backup program that came with it, then erase the hard disk, and finally restore its contents from the backup.

The backup, erase, and restore maneuvers should cure your folder troubles too. Those problems probably result from a garbled Desktop file, which is the invisible file that the Finder uses to keep track of its desktop organization. The Finder automatically reconstructs the Desktop file as needed, and you can force complete rebuilding by holding down the Option and ⌘ keys while starting up your Mac or when quitting an application. On an MFS disk, rebuilding the Desktop file results in folder names like those you mention. Also, comments in the Get Info box are lost after any disk is rebuilt, whether HFS or MFS.




***The Telltale Spot***
*The Finder indicates an HFS disk by displaying a dot as shown here. No such dot appears in an MFS disk window.*

*(continues)*

In January, at MACWORLD Expo/San Francisco, a new software package will be unveiled–a spreadsheet so revolutionary that it is being called the next generation spreadsheet.

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## Q Stuck in Transylvania

In the adventure game *Transylvania,* you're supposed to find the princess Sabrina. I've tried everything. I can't seem to get the grate open, get the key, or see what is in the statue. Will you give me some advice on how to win?

*C. A. Metcalfe*
*Spring, Texas*

A Here's a hint from Otto Waldorf, *Macworld*'s game guru: feed the frog. If you want more help, call *Transylvania*'s publisher, Polarware/Penguin (P.O. Box 311, Geneva, IL 60134, 312/232-1984) or send the company a self-addressed, stamped envelope for a free hint sheet. Many game publishers provide a similar service. For example, Mindscape returns free cheat sheets for *Déjà Vu, Uninvited,* and its other games in the self-addressed stamped envelope you send them (3444 Dundee Rd., Northbrook, IL 60062, Attn: Cheat Sheet Dept.; specify which game). If you're stuck on *Zork I, Hitchhiker's Guide to the Galaxy,* or another Infocom game, get the $7.95 hint book from your software dealer, or order it from Infocom's mail-order service (P.O. Box 478, Cresskill, NJ 07626, 800/262-6868).

A map and the solution to the Apple II version of *Transylvania,* which is very similar to the Mac version, appears in *The Book of Adventure Games* by Kim Schuette ($19.95 from Haba Arrays, 6711 Valjean Ave., Van Nuys, CA 91406). That book and its companion, *The Book of Adventure Games II,* include maps, descriptions, and clues for scores of adventure games—not specifically for Mac versions, but still valuable. Electronic bulletin boards (BBSs) are another good source of tips for adventure games, particularly the harder games. But beware; sometimes you get hints that help you keep playing, but other times you get outright solutions that ruin the game.

## Q BASIC's FILLPOLY Statement

I am writing a Microsoft BASIC program in which a rectangle must alternately flash black and white. I intend to use this statement:

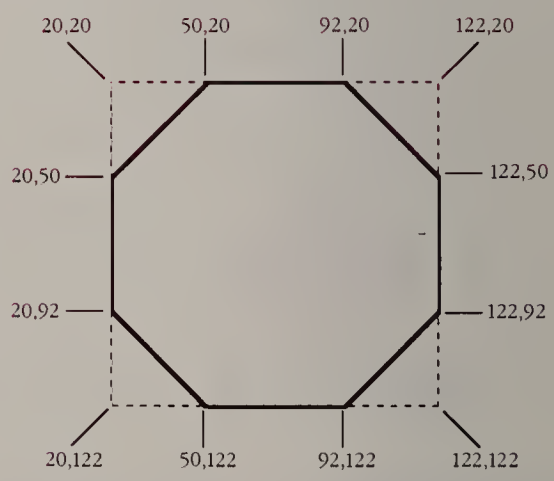
CALL FILLPOLY
(VARPTR(*polygon*%(0)),
VARPTR(*pattern*%(0)))

However, I really don't understand the statement. With what should I replace *polygon*% and *pattern*%? With what should I replace the zeros?

*Niraj Sheth*
*Wyomissing, Pennsylvania*

A The CALL FILLPOLY statement calls a routine in the Macintosh ROM that fills a polygonal shape with a pattern. You define the shape in an integer array and use your array name in place of *polygon*%. Similarly, you define the pattern in another integer array and use its name in place of *pattern*%. In each case, the ROM routine needs to know where the integer array starts in memory, hence the use of the VARPTR function with the first array element, whose index number is 0.

The first element of the shape-defining array specifies the number of bytes in the entire array, including the first element itself (each element takes two bytes). The second through fifth elements specify the top, left, bottom, and right coordinates, respectively, of the rectangle that frames the polygon. Remaining elements specify the corners of the polygon: the sixth element specifies the first corner's *y*-coordinate, the




```
hexagon%(0)=46          hexagon%(12)=122
hexagon%(1)=20          hexagon%(13)=122
hexagon%(2)=20          hexagon%(14)=92
hexagon%(3)=122         hexagon%(15)=122
hexagon%(4)=122         hexagon%(16)=50
hexagon%(5)=20          hexagon%(17)=92
hexagon%(6)=50          hexagon%(18)=20
hexagon%(7)=20          hexagon%(19)=50
hexagon%(8)=92          hexagon%(20)=20
hexagon%(9)=50          hexagon%(21)=20
hexagon%(10)=122        hexagon%(22)=50
hexagon%(11)=92

CALL FRAMEPOLY (VARPTR (hexagon%(0)))
```

***Your BASIC Hexagon***
*An integer array is used to define a polygon for several MBASIC statements. This example defines a hexagon.*

*(continues)*

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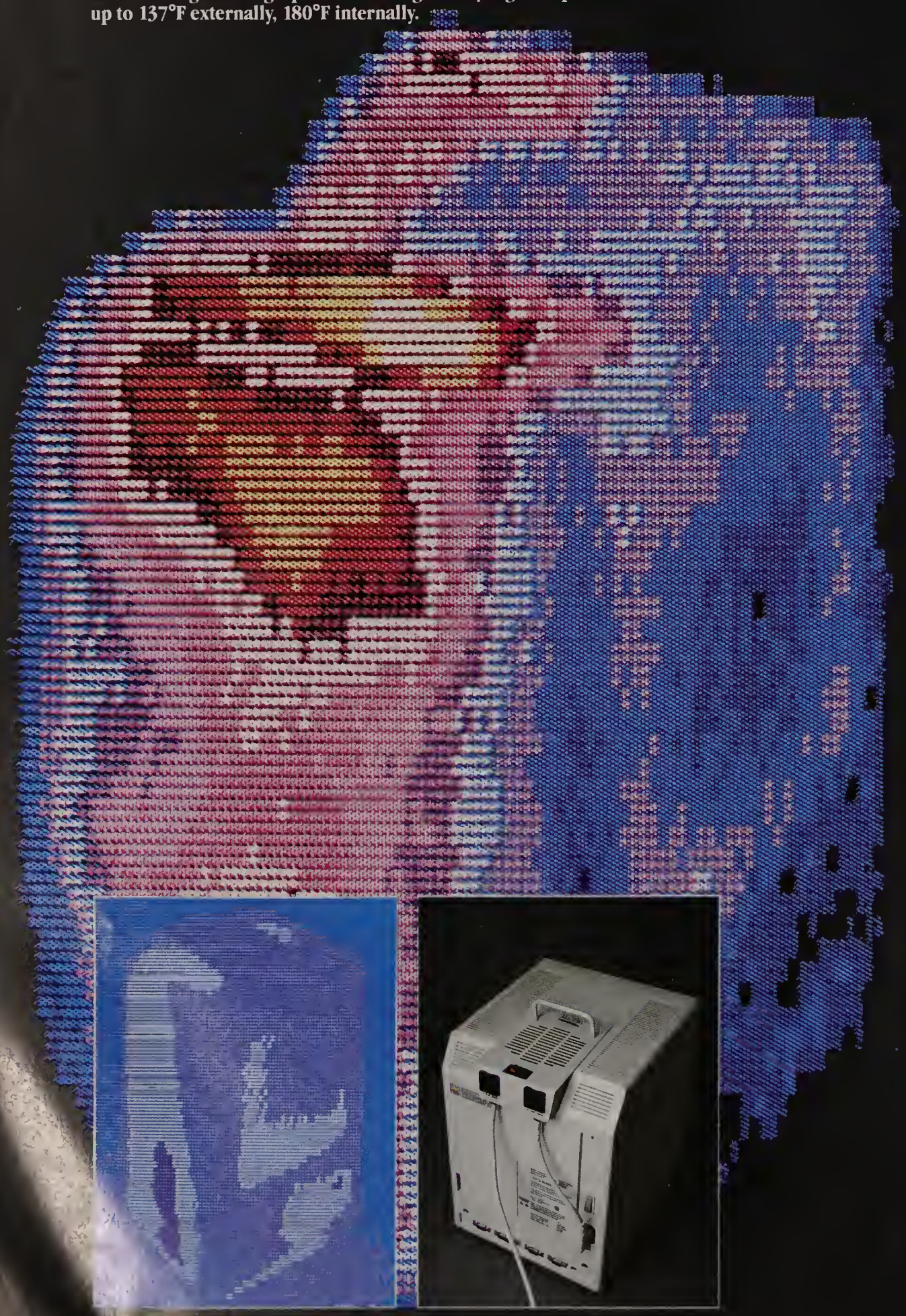





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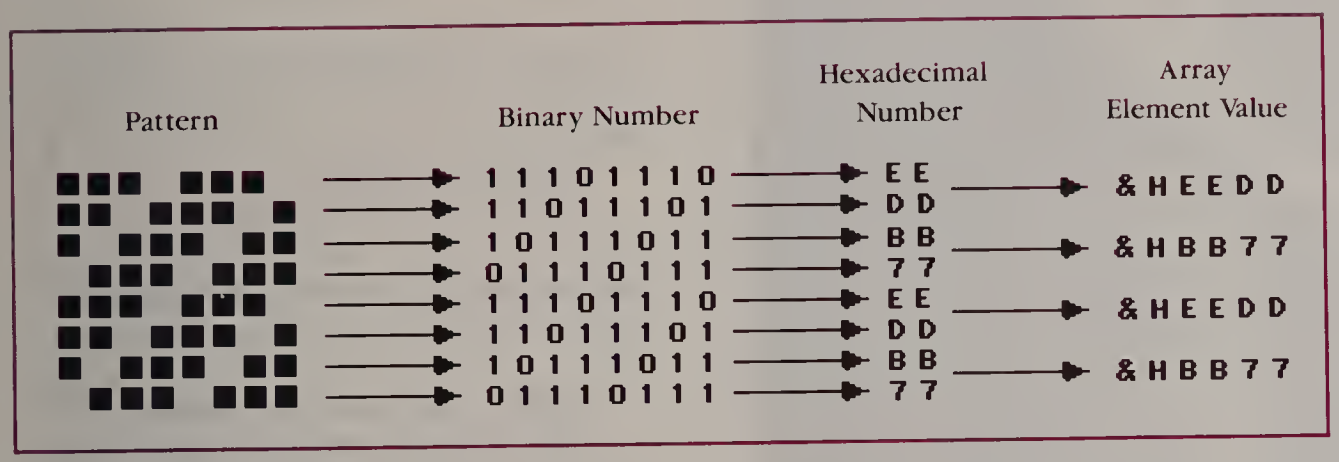


***Connecting the Dots***

*Define a fill pattern in MBASIC by converting its dots to binary numbers and then converting the binary numbers to hexadecimal numbers. The hexadecimal values for two consecutive rows of dots make up one element of the integer array used to store the pattern.*

seventh element specifies its *x*-coordinate, the eighth element specifies the second corner's *y*-coordinate, the ninth element specifies its *x*-coordinate, and so on. All coordinates are relative to the upper-left corner of the window. "Your BASIC Hexagon" shows a sample integer array that defines a hexagon.

The arrangements of black and white dots that make up a pattern are stored as hexadecimal numbers in a four-element integer array. "Connecting the Dots" shows how to determine values for the pattern array. For more information, see *Get Info,* November 1985, and *Open Window,* July/August 1984.

The CALL FILLPOLY statement may be unnecessarily complex for your needs. Why not use the CALL FRAMERECT statement to draw your rectangle and the CALL INVERTRECT statement each time you want to change its color? Both of those statements use a single integer array whose four elements define the top, left, bottom, and right coordinates of the rectangle. No need to specify corner coordinates, as you must in the CALL FILLPOLY statement. And if you're working with polygons other than rectangles, the CALL INVERTPOLY statement changes black to white and vice versa; repeatedly executing it makes an object flash without specifying fill patterns.

For a more elegant and powerful approach to this problem, I recommend *ToolLib* ($35 from Clear Lake Research; 5615 Morningside #127; Houston, TX 77005; 800/825-2246 ext. 199, 800/362-2421 ext. 199 in Kansas). *ToolLib* adds dozens of new statements to MBASIC that provide better access to the Mac ROM routines than do the standard MBASIC statements (see *Reviews, Macworld,* December 1986).

### Selecting from a Crowd

***Tip:*** I use the Macintosh in a quick-print business for typesetting customers' work. My favorite program is *PageMaker* because of its versatility. But I used to get frustrated when trying to select and move a segment of text that was next to another segment of text. Too often I would get the wrong text. Then I discovered that using the Send To Back command in the Edit

*(continues)*


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menu gets the undesired text out of the way. Now I can easily select and move the desired text.

*Deborah M. Leaf*
*Fond du Lac, Wisconsin*

*This method also works with nontext items—and is just as handy in* MacDraw.

### 800K Disk—Hold the Folders

***Tip:*** Some programs still aren't compatible with HFS. Does this mean you can use these programs only on 400K disks? Nah. Just follow this procedure to produce 800K MFS (non-HFS) disks.

1. Start up the Mac Plus or Mac 512K Enhanced using a start-up disk that contains System version 2.0 (creation date April 8, 1985) and Finder version 4.1.

2. Insert a disk in a double-sided (800K) drive.

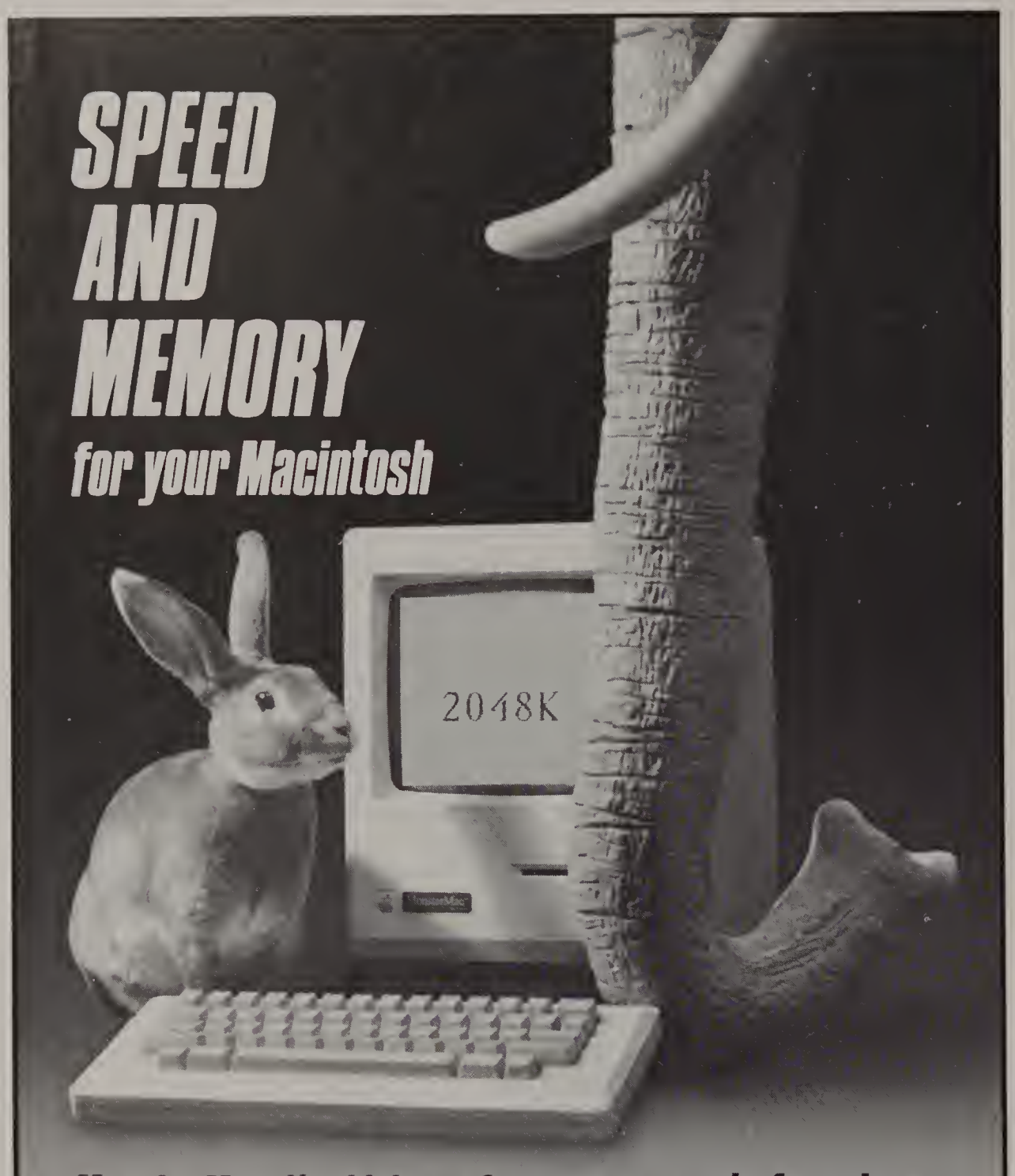
3. Choose Erase Disk from the Special menu. The dialog box that appears does not give you a choice of initializing single- or double-sided. However, because the initialization process is a ROM routine in the new 128K ROM, the disk will be initialized for 800K anyway.

4. Open the newly initialized disk; you'll see 799K available and 1K in the disk. Copy the latest System and Finder you used in Step 1 to the disk along with your program and its files. If your program is copy protected, the program may not allow you to copy it. Programs such as *Copy II* ($39.95 from Central Point Software, 9700 S.W. Capitol Hwy. #100, Portland, OR 97219, 503/244-5782) and *Hard Disk Util* ($89.95 from FWB Software, 2040 Polk St. #215, San Francisco, CA 94109, 415/474-8055) unprotect software for backup purposes. They are very useful when copying programs from your 400K disks to your new 800K disks.

*Joel S. Peskoff*
*Forest Hills, New York*

*If you insert a brand new disk at Step 2, the dialog box appears automatically at Step 3, without making you choose the Erase command. You can't make 800K MFS disks on an unenhanced Mac 512K with an external 800K drive—you need the 128K ROM.*

*Send tips or questions to* Quick Tips, Macworld, *501 Second St. #600, San Francisco, CA 94107. Send electronic mail to CompuServe 70370,702 or The Source BCW440. All published submissions become the property of* Macworld. □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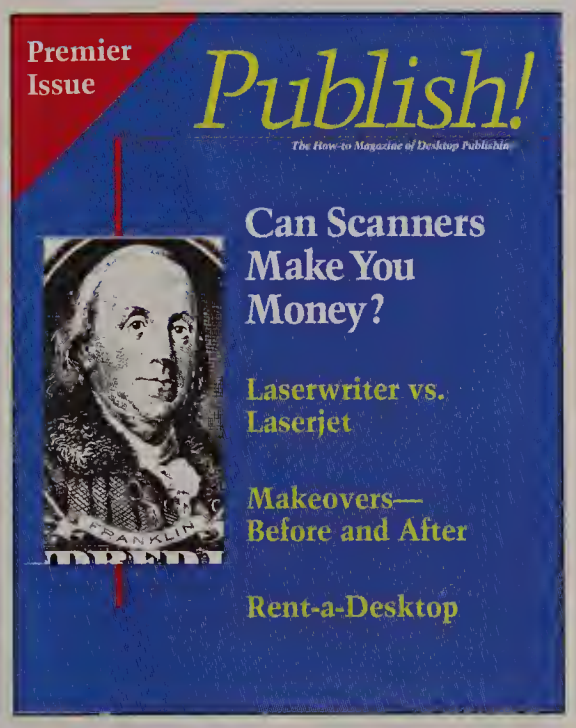


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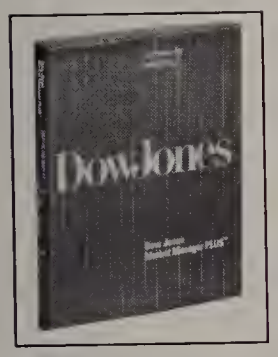


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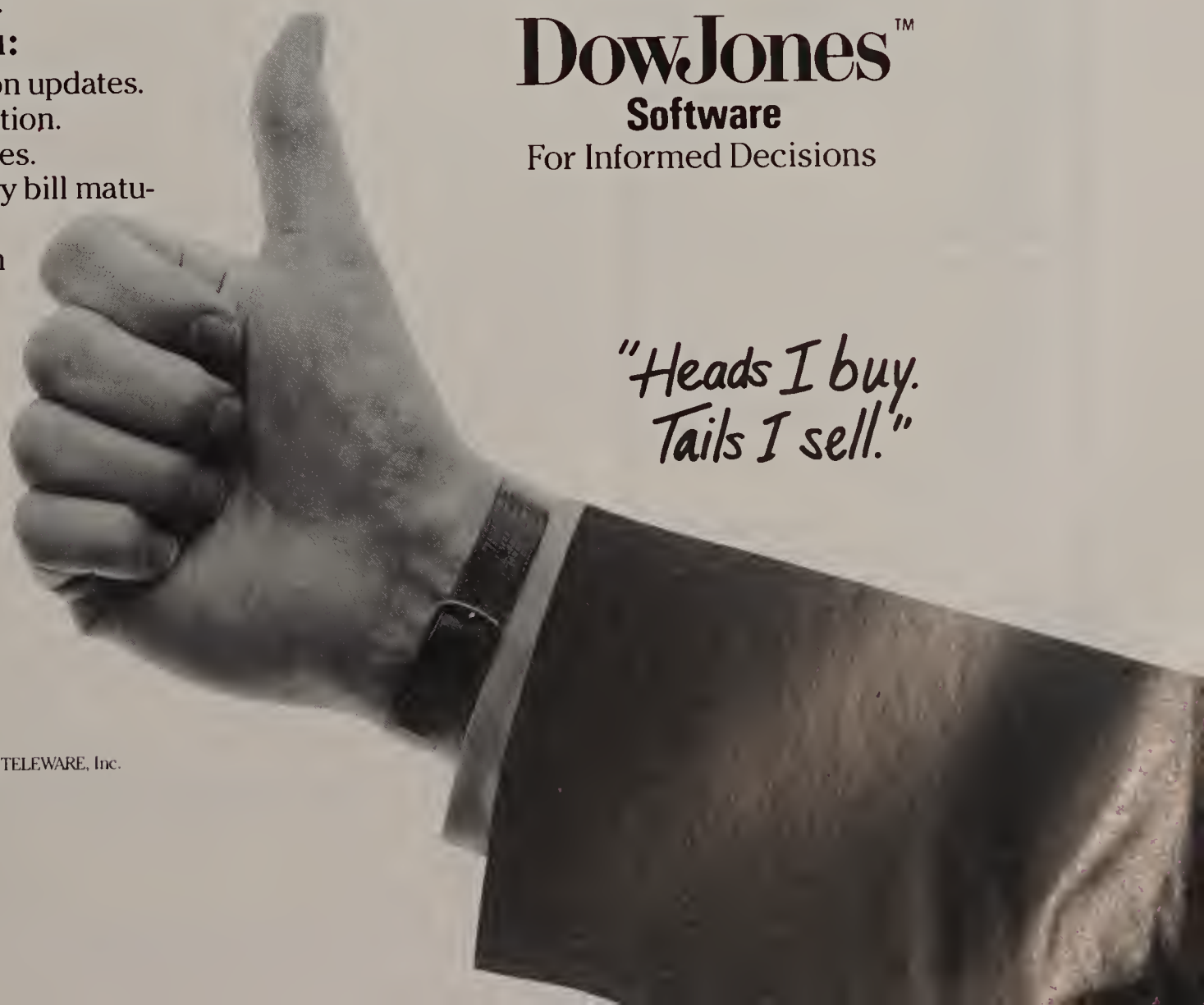


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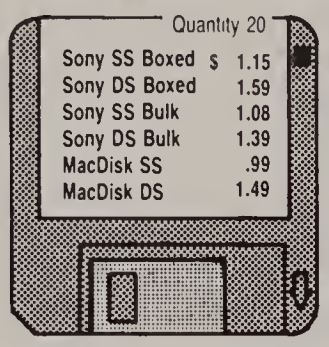


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been deliberately left out of ROM because it performs a task that may change as the Macintosh and its peripherals evolve. For example, controlling software for the Mac Plus's SCSI expansion connector is patched into RAM to correct bugs.

### ROM for Improvement

One question you may occasionally hear is, "Which ROM do you have?" The Macintosh Plus premiered with twice the ROM of the original Mac–128K versus 64K. The new ROM chips contain revised system software. Many of the revisions represent performance improvements, but the main reason for the extra ROM is to hold the Hierarchical File System (HFS), the new disk-management software that lets the Plus take better advantage of hard disks and 800K floppy disks. I examined some of the differences between HFS and the original Macintosh File System (MFS) in last month's column.

If your Mac contains the original 64K ROM, unflatteringly referred to as "the old ROM," you might consider upgrading. The 128K ROM boosts the machine's performance and adds niceties such as improved text display and a zoom box for quickly resizing windows to fill the screen. (Programs must be written to take advantage of the new ROM's features, however. Most programs released after the Mac Plus's debut in January 1986 are compatible.)

Apple has paved several upgrade paths for 512K and 128K Mac owners. At this writing, the best buy changes a 512K Mac to a 512K Enhanced for $299. This upgrade gets you the new ROM and an internal 800K disk drive–in other words, a Mac Plus with half the memory and the old keyboard, which many people prefer anyway. A logic board upgrade costs $599 ($799 for 128K Macs) and buys a Mac Plus logic board and a new rear case (to accommodate the different-size port connectors) but, unfortunately, not the 800K drive.

If you opt for the logic board upgrade, you could save money by keeping your 400K internal drive and buying an external 800K disk drive other than Apple's. Drives from DataSpace, PKI, and others are often discounted to less than $250 and are compatible with, and in one way superior to, Apple's. Apple's 800K drives have an annoying habit of occasionally refusing to eject a disk completely. They suck it back in, forcing you to pull out the Universal Disk Disgorger (an unbent paper clip) to rescue the disk–a job that always gets a guffaw

*(continues)*


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out of onlooking IBM PC users. For the scoop on 800K external drives, see "Both Sides Now," *Macworld,* November 1986.

### Performance Issues

Which upgrade is best? A 512K Enhanced Mac is generally as fast as a Mac Plus, except when running very large programs like *PageMaker* or *dBase Mac,* which can keep more of their complex code in RAM at once. But the Plus's extra memory has another advantage. You can dramatically boost performance by using a special type of program, available through user groups, that sets aside part of the RAM as an electronic disk, or *RAM disk.* To the Mac's operating system, a RAM disk looks like a disk drive. You can store programs in a RAM disk and open and close them at blazing speeds, since RAM has no mechanical parts to slow down data transfer. Some people also store documents in RAM disks, but because RAM forgets when the power is cut off, doing so leaves your work at the mercy of power problems.

The 128K ROM also allows a performance-boosting technique similar to a RAM disk called a *RAM cache.* Rather than storing a specific set of files and programs in memory, as a RAM disk does, a RAM cache monitors disk activity and copies frequently accessed areas of a disk into memory, decreasing the need for more time-consuming disk access. RAM caches are especially useful if you repeatedly use the same programs, since portions of a program remain in the cache when you quit, eliminating the need to load them from disk when you restart the program.

You specify the capacity of the disk cache using the Control Panel on the Apple menu. A large disk cache generally boosts performance more than a small one since more information can be held in RAM. Contrary to wild rumors, when you select Save, data in the cache *is* written to disk. For more information on RAM disks and caches, see "The Mac's Best Performance," *Macworld,* October 1985.

The full Mac Plus upgrade supplies one more performance edge, one that becomes important if you decide to add a hard disk to your system: a SCSI port. Short for *Small Computer Systems Interface* and inelegantly pronounced *scuzzy,* a SCSI port opens the Mac's doors to hard disks that are far faster than those that connect to Macs without SCSI ports (see "Shopping for SCSI Storage" in this issue).

### Hello, Central

RAM, ROM, SCSI, and the rest would be nothing without the *central processing unit,* or CPU. The CPU is the main brain, the microprocessor chip that executes the individual instructions that form a program, and that shepherds data between disk and memory and between memory and expansion ports. In short, the CPU has a hand in virtually every task performed by the computer.

A microprocessor's activity follows the beat of an extremely stable electronic metronome. Many factors govern a computer's speed, but the number of times per second the machine's metronome ticks is foremost among them. The clock governing the Mac's Motorola MC68000 microprocessor ticks 8 million times per second, giving the Mac a *clock rate* of 8 million hertz (cycles per second), or 8MHz. The IBM PC's Intel 8088 microprocessor, by contrast, shuffles along at a more leisurely 4.77MHz. Future Macs are likely to have a different micro-

*(continues)*


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## Alphabits

***ASCII*** *(askee)* American Standard Code for Information Interchange. A standard that defines the way letters, numbers, special characters, and certain control characters (such as carriage returns) are stored in the computer. ASCII often represents the only common ground between different models of computers. It enables various personal computers to communicate via modems and exchange ASCII data files, which do not contain any codes or characters specific to a particular brand of computer. On the Macintosh, ASCII files are often called *text only* files.

***DB-9*** *(dee-bee-nine)* The nine-pin connector used for both the modem and printer ports on the Macintosh (not the Macintosh Plus).

***DB-25*** *(dee-bee-twenty-five)* The 25-pin connector used for the SCSI port on the Macintosh Plus.

***MIDI*** *(middy)* Musical Instrument Digital Interface. An expansion standard for musical instruments that lets you connect synthesizers together and to computers for music recording and playback (see "Musical Wares," *Macworld,* February 1986).

***PICT*** *(picked)* A format in which many Macintosh programs, including *MacDraw,* can save graphic documents.

***RIP*** *(rip)* Raster imaging processor. The imaging engine of a laser printer, which turns page descriptions (in PostScript, for example) into print. The LaserWriter is a RIP.

***RS-422A*** *(are-ess-four-twenty-two-a)* The type of serial communications interface used for the Mac's modem and printer ports. RS-422A is a faster version of the RS-232C standard, the type of communications port found on IBM PCs and many other computers.

***SCSI*** *(scuzzy)* Small Computer Systems Interface. The high-speed expansion port used for attaching hard disks and other peripherals to the Mac Plus.

***SIMM*** *(sim)* Single in-line memory module. The RAM expansion modules that allow you to increase the RAM in the Macintosh Plus.

***Xmodem*** *(eks-modem)* A method of transferring files over a modem that ensures that no data is lost or garbled.

processor, probably the Motorola 68020. The 68020 (pronounced *sixty-eight-oh-two-oh* or *sixty-eight-twenty*) is compatible with 68000 instructions—a vital characteristic if future Macs are to remain compatible with today's machines—but can operate faster and has additional, more powerful instructions.

### Letter Rip

I've covered the Big Three acronyms—RAM, ROM, and CPU—but there are many others, as well as a world of abbreviations, that you may encounter. Some common ones are defined in "Alphabits." When you run into one that isn't, don't panic. Remember, most acronyms are just someone's nasty way of turning a few understandable words into a mysterious jumble of letters. You simply have to find out what the letters stand for.

But pronunciation can also be a problem. SCSI may be pronounced as a word, but you'll get strange looks if you ask someone which file system he or she is using—miffis or hiffis. □

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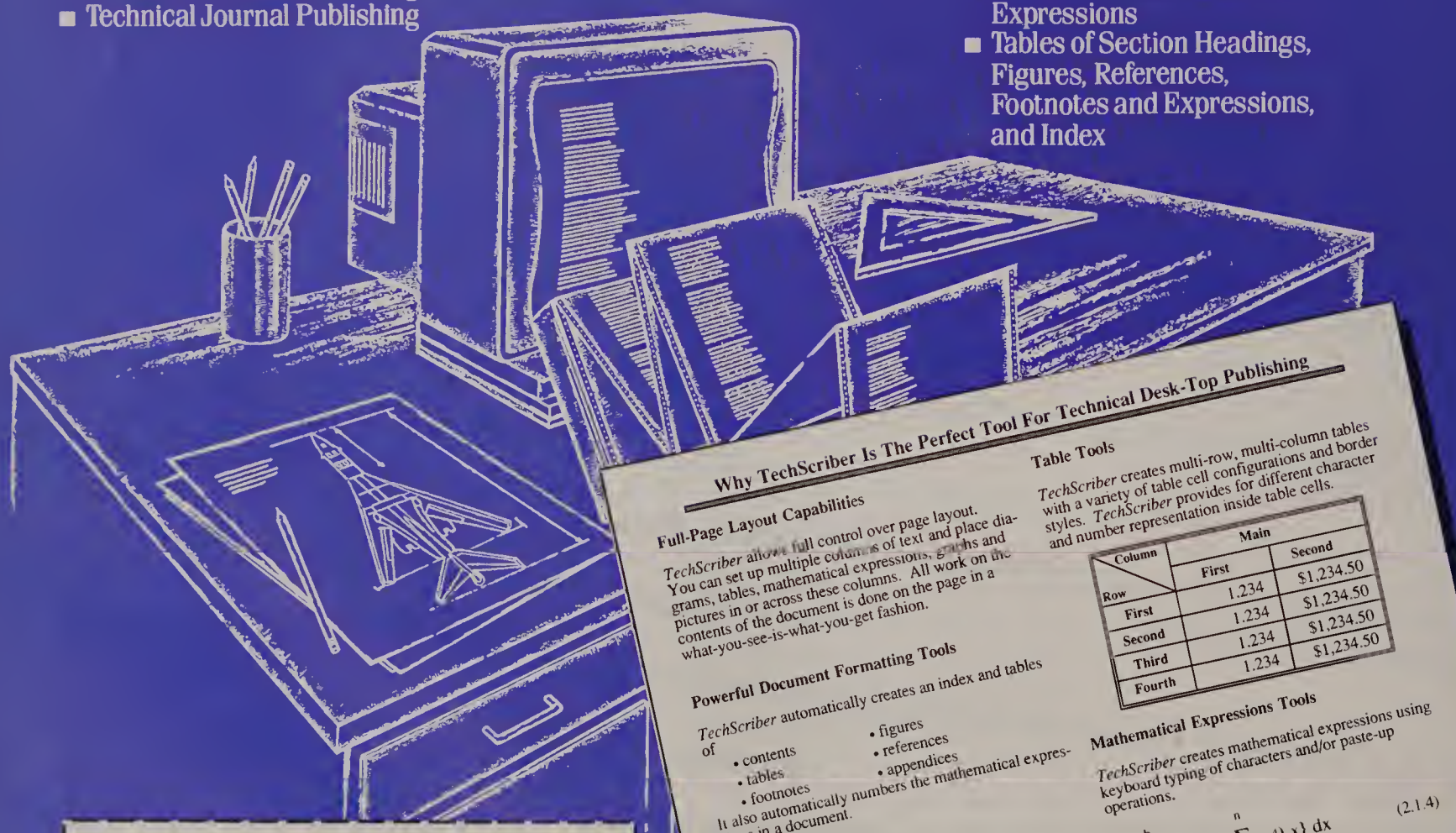

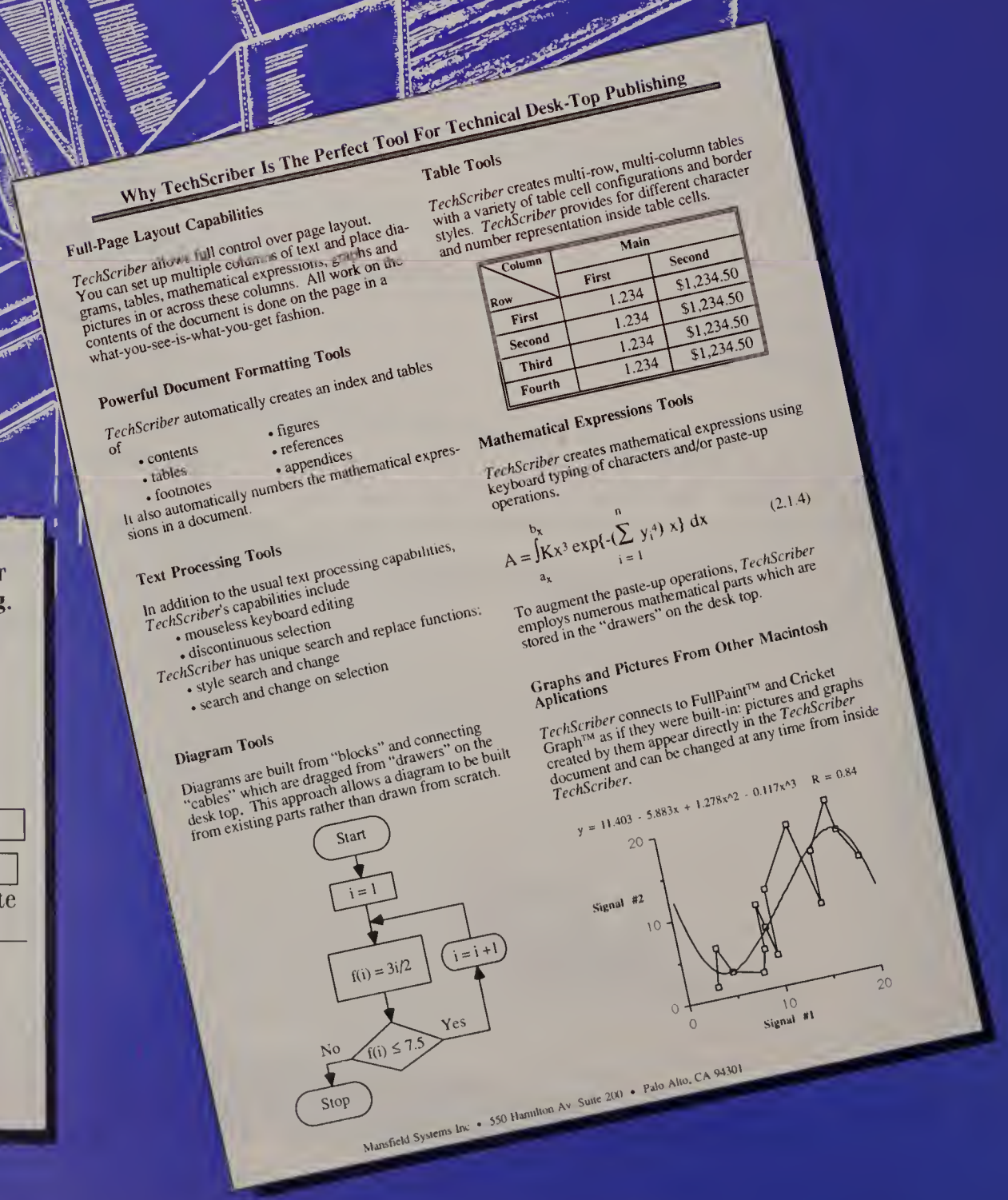

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**Powerful Document Formatting Tools**

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- search and change on selection

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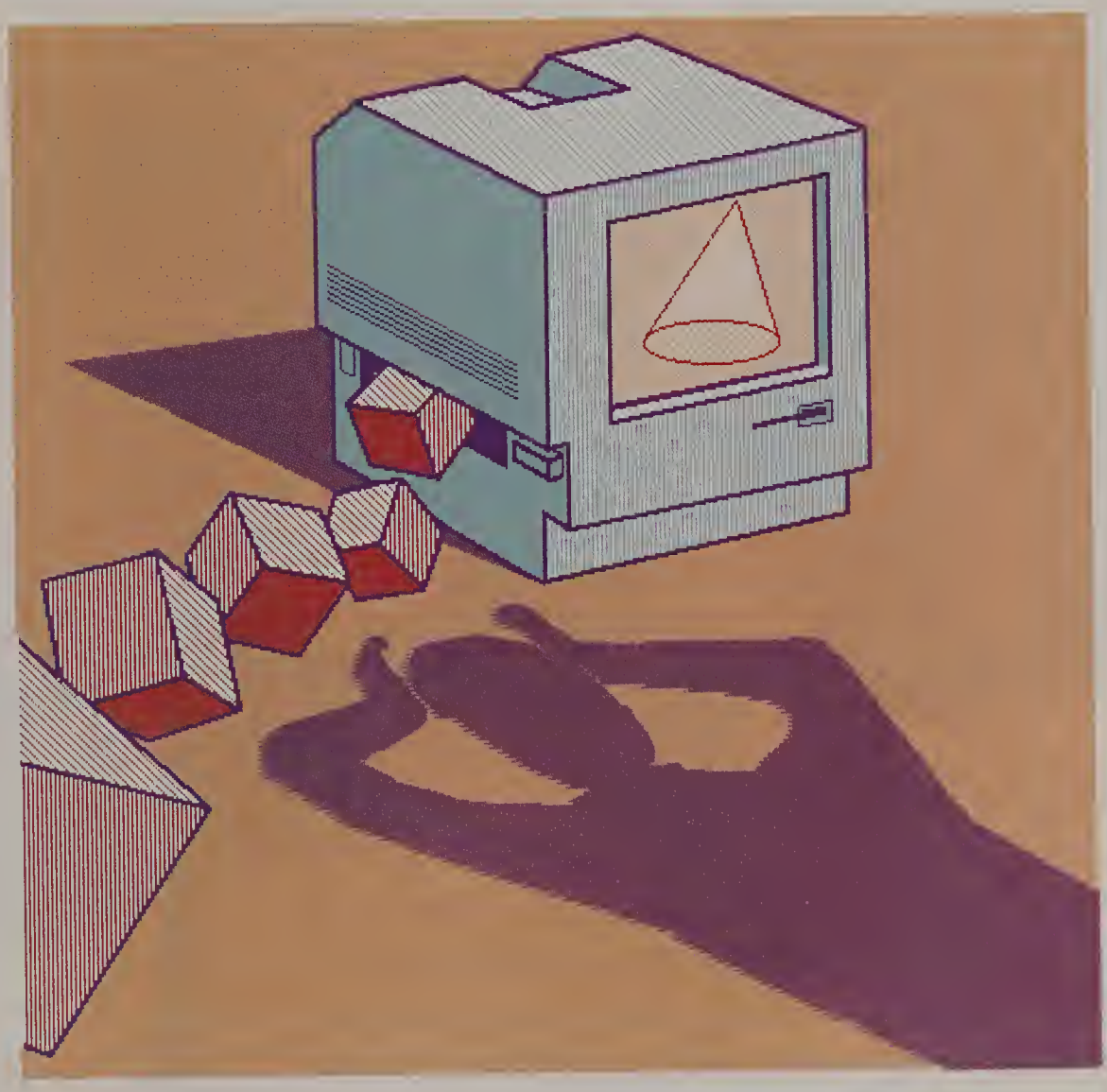
# Insights on the LaserWriter

*A clearinghouse of tips for handling pesky printing problems and generating high-quality laser printouts*

***by Charles Seiter and Daniel Ben-Horin***



MICK WIGGINS

When Apple introduced the LaserWriter in 1985 (followed by the LaserWriter Plus in March 1986), it changed forever the print standard for computer users. The LaserWriter's multifont, fast, near-typeset-quality output became the standard against which other printers are measured, and usually found wanting. Proud machines of yesteryear—even the ImageWriter in Mac-based offices—have been relegated to the realm of quick and dirty jobs.

Tips for LaserWriter use tend to focus on a handful of problem areas. First, there can be small but annoying gaps between the LaserWriter output you expect and the output you actually get. Second, the power and flexibility of the LaserWriter lure advanced users into exploring ways of modifying and customizing output. Third, the occasional resemblance of the LaserWriter to a somewhat cranky office copier produces a variety of suggestions about paper and toners. We thank the customer service staffs at Apple, Aldus, and Green Mac (Ukiah, California) for dealing with our litany of complaints and questions collected from scores of users.

## WYSIWHOOPS

The LaserWriter's deviation from strict What You See Is What You Get drives many users to distraction, particularly since they have been conditioned by the usually admirable fidelity of the ImageWriter in this regard. The acronym WYSIWHOOPS (What You See Is What Happens On Operating in PostScript) covers this category of near misses. Herewith please note some fixes, patches, and well-meaning advice.

**Page Size** If you pick out a 10 percent shading pattern for the whole printing area in a document page and send it to the LaserWriter, you won't get edge-to-edge printing. Not only will the image be a little smaller than you might expect (see "The Printed Page "), but you will also find that the print area is off center by about ⅛ inch. To work around this, study the output and modify your document margins accordingly. For example, if your footprint is ⅛ inch too far to the left, move the page margins ⅛ inch left on the formatting ruler.

Version 1.2 of *PageMaker* takes a further print-area bite of ⅜ inch from the margins. To restore the printed area to its original size, click the Maximum Print Area option.

Likewise, *MacDraw* coordinates are offset somewhat when they appear on paper. The upper left corner (*MacDraw* coordinate [0,0]) is inset about 1/10 inch from the top and left.

Use the page-size table to help you plan bleeds. Format your document in legal size, print it, and then trim the top and bottom to bring a pattern or rule all the way to the edge of the page.

**Image/Laser Match** Certain settings produce superimposable ImageWriter and LaserWriter output. This is especially valuable if your laser use takes place at a service bureau that charges by the hour or the page (get it right the first time!). In *MacWrite* 4.5, use Times 12 and the Tall Adjusted print setting and set margins on the ruler at 1 inch (left) and 7

*(continues)*

***The Printed Page***
*Armed with the printing area sizes of these papers, you can produce top and bottom bleeds and other special effects with a little trial and error.*

**The Printed Page**

| Paper | Size | Maximum Printing Area |
|---|---|---|
| Letter | 8.5 by 11 inches | 8 by 10.9 inches |
| Legal | 8.5 by 14 inches | 6.75 by 12.5 inches |
| A4 (European) | 8.3 by 11.7 inches | 7.8 by 11.2 inches |

inches (right). In *Microsoft Word* 1.05, use Times (9-14 point), 1 inch left and 1 inch right as page setup margins, 0 inch left and 6.5 inch right as screen ruler settings, Leading:Auto (from *Word* Paragraph Formats), and the Tall Adjusted print setting.

Also observe that this trick assumes no Font Substitution. Preview the document in Times and then print it in Times. In general, substituting fonts when laser-printing can lead to incorrect spacing, doom, and disgust. Resist all temptations to change fonts in a dialog box.

**Dumping** There simply isn't a ⌘-Shift-4 screen dump for the LaserWriter. You must revert to ⌘-Shift-3 and print the resulting *MacPaint* file.

**Better Than What You See** You can draw a full-size picture in *MacPaint,* move it over into *MacDraw,* and reduce it in size by a factor of four. Although the resulting picture (approximately 3 inches square) generally looks murky on the Mac screen, the LaserWriter output will be fantastically sharp. Try it!

### Performance

Because in principle the LaserWriter is capable of generating nearly any conceivable image, advanced thinkers will want to investigate total control of the machine. An excellent place to start is the *PostScript Language Tutorial and Cookbook* from Adobe Systems (Addison-Wesley, 1985). The LaserWriter responds to PostScript instructions, and all files are translated into PostScript commands (which look rather like FORTH instructions) for printing. If you know how to "program" in PostScript, you can go far beyond simple document printouts.

**Looking into PostScript** If you hold down the ⌘, Shift, and F keys immediately after clicking OK when printing to the LaserWriter, you will generate an ASCII file called PostScript. This file contains the instructions the LaserWriter uses to print your document. If you examine the PostScript commands for a variety of small documents (a small amount of printing can correspond to a large PostScript file), you will soon develop a feeling for the way PostScript works. Try modifying files (the aforementioned book has some simple examples) and comparing outputs.

**Printing Faster by Traveling Light** One of the things you learn by examining PostScript files is that fancy stuff makes them quite cumbersome. There's an obvious trade-off involved, but if you opt for fewer flourishes, you give the LaserWriter some breathing room in memory and are rewarded with faster output (see

*(continues)*

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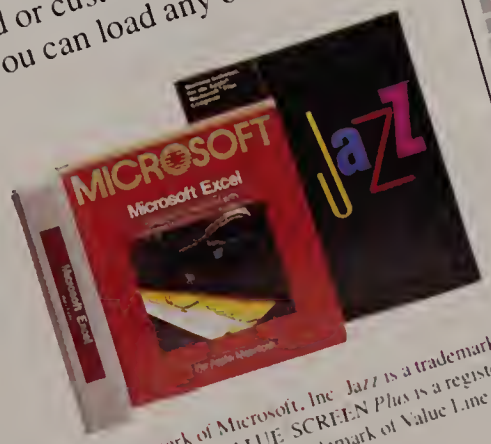


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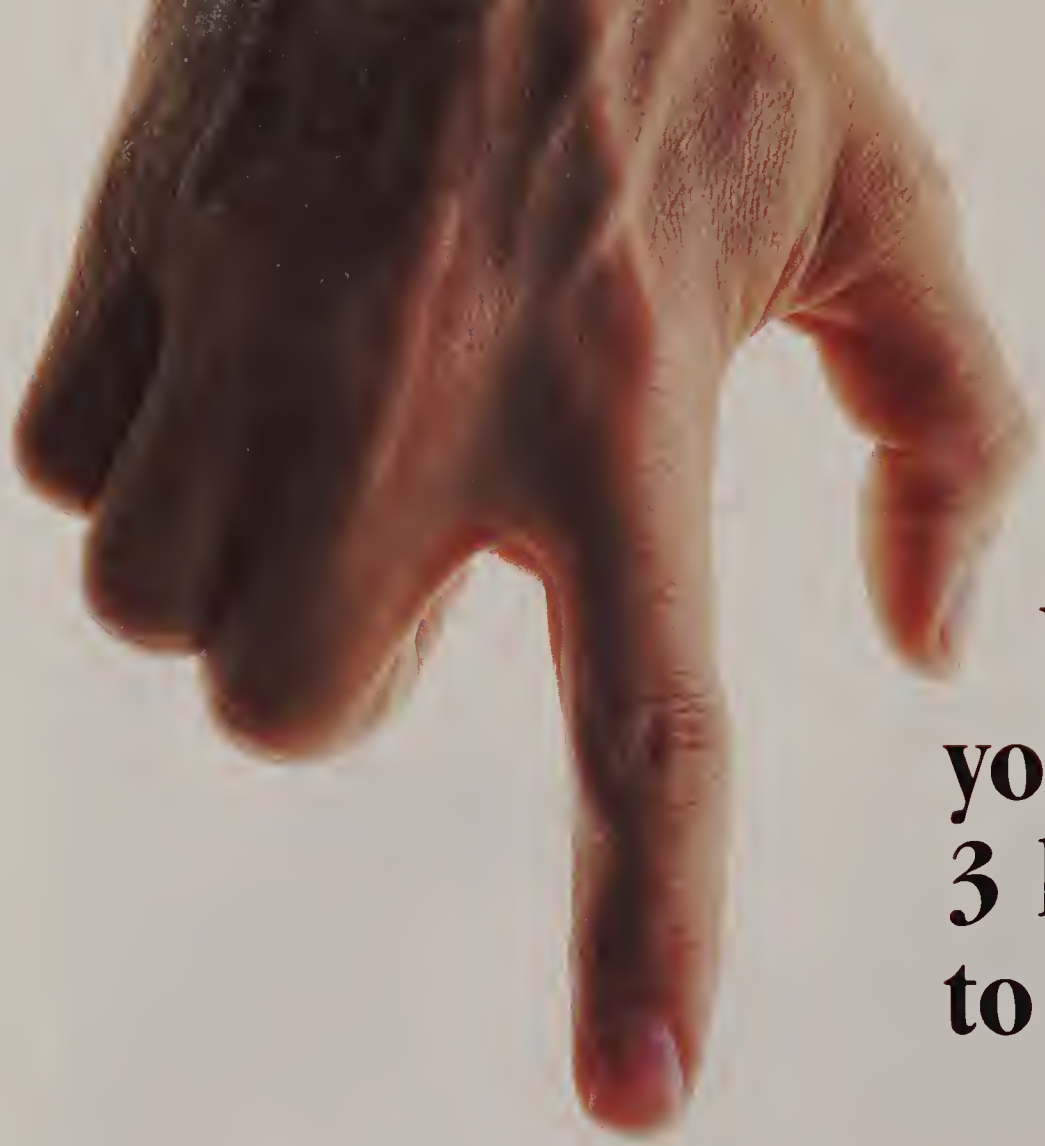

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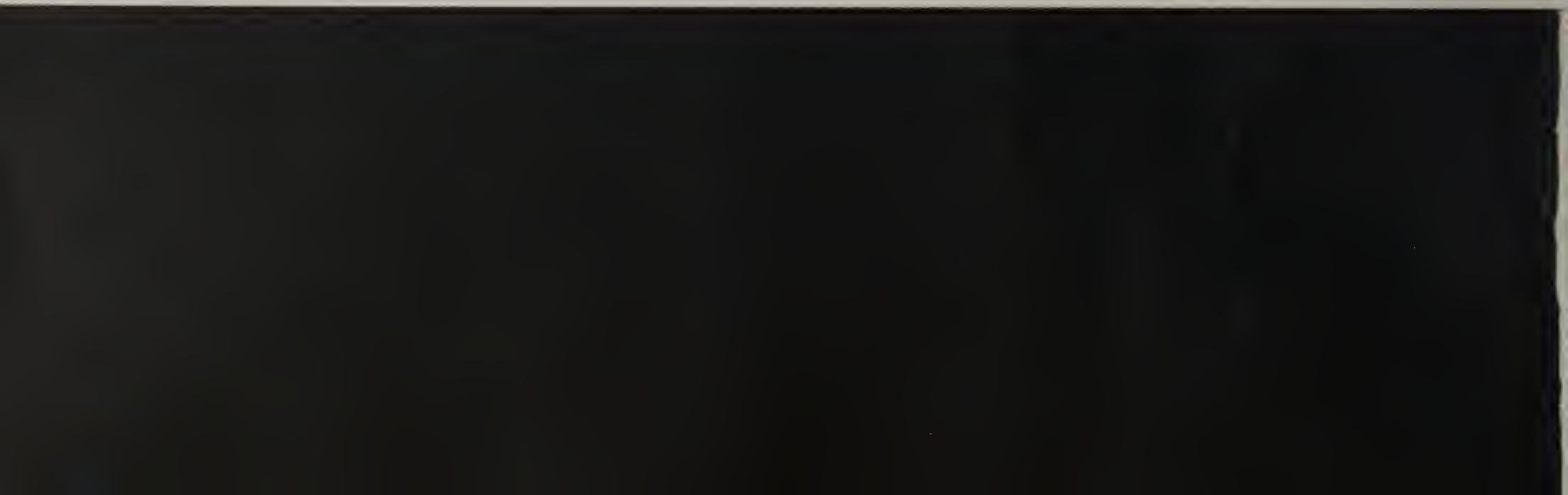

"PostScript Insights"). Watch out for the following drag-inducing conditions.

- Large text (over 20 points).
- Lots of pattern shades or lines.
- Bit-mapped fonts with *PageMaker* or *Word*.
- Smoothing.
- Justified text.

**More Hope for the Impatient**

Consider either a software spooler or a hardware spooler. Spoolers provide a separate memory store for the document being printed, which frees your Mac for other tasks right away.

**Fonts** The original LaserWriter provided the Times, Helvetica, Courier, and Symbol fonts. The LaserWriter Plus adds Avant Garde, Bookman, Helvetica Narrow, New Century Schoolbook, Palatino, Zapf Chancery, and Zapf Dingbats (dingbats are mostly symbols for the printing trade). You may find to your delight that the following nonlaser fonts, printed directly from *MacWrite,* give very good results: Bodoni, Boston, Clean, Monaco, and Stuttgart. More rounded fonts, such as Ravenna, Script, and Venice, are much less satisfactory.

*(continues)*

The power of the press
belongs to those who own one.
- A. J. Liebling

❖ The
Power of the press
belongs to Those
Who own one. ▬

***PostScript Insights***

*Changing fonts frequently and using extra-large type, smoothing, or justification slow printing because longer PostScript commands are required. The simple, single-font example had 44 lines of code in its PostScript file; the more elaborate version, with its patchwork of fonts, had 165 lines of PostScript code and reached the limits of the LaserWriter Plus's font memory.*


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**Circle 702 on reader service card**

Although you can define your own typeface in PostScript, it's a tedious business. You may want to look into the additional fonts available directly from Adobe Systems (acquiring, in the process, Adobe's universally admired font-downloading program). Other developers, such as Casady Company and Century Software, market downloadable laser fonts (see "Putting on a Good Face," *Macworld,* July 1986). *Fontographer* from Altsys Corporation of Plano, Texas, also wins high marks for convenient font generation.

In the interest of aesthetics, we feel obliged to remark that the dearth of fonts is not usually a pressing problem; one of the telltale signs of amateurish desktop publishing is the use of too many fonts in one document.

**Using Utilities** With *LaserFeeder,* available on the main national Mac bulletin boards and through user groups, you can send PostScript files to a LaserWriter from a Mac over AppleTalk. This also means that PostScript files generated elsewhere (on a VAX, for example) can be sent to a Mac for laser printing.

*ResEdit,* the Mac resource editor, lets you define fully kerned characters. (Basically, kerning is adjusting the spacing of symbols for harmonious printed appearance—for example, fine-tuning the spacing of *A* and *V* in AVIATION.) For scientific notation, this allows overbars, hats, and superscripts above any symbol. Keep an eye out, though, for new word processing tools that might save you the trouble of painstakingly kerning all the character pairs by hand.

### Mechanicals

After all known software glitches have been fixed and all possible fonts designed, there remains the primordial issue of marking paper with black stuff. For paper, a set of consensus recommendations has emerged over the last year, and a few tips about toner cartridges have proved valuable.

**The Paper Chase** The standard "good" paper is Laser Plus, a 24-pound paper with a smooth finish from Hammermill of Erie, Pennsylvania. Other favorites include Dello Opaque English Finish from the James River Corporation of Newark, Delaware, and 70-pound Smooth Opaque from Simpson of San Francisco. For paste-up originals you need paper that stands up to waxers: for example, Quintessence Dull from Northwest Paper Company of Cloquet, Minnesota, and—recommended by reader Josephine R. Gibson—Patina from S. D. Warren of Boston. The label stocks recommended by Satori Software, which puts out *Bulk Mailer,* are Avery 4220 (three-up) and 4221 (two-up), which can also be ordered in custom sizes.

If you change weights of paper stock frequently, you are asking for skewing problems—lines printed at an angle because of misfeeding. For optimum results, have the paper feeder "squared" for paper of a respectable weight (at least 20 pounds) when the printer is first set up and resist the temptation to economize by running cheaper, lighter paper through the machine. Alternatively, have a qualified service person resquare—that is, make fine adjustments for thickness so the paper feeds squarely into the printer—before changing weights of paper. Because the thickness adjustments are easily undone, you might think twice about laser-printing mailing labels. In fact, one print shop bans labels on the LaserWriter but makes a

*(continues)*


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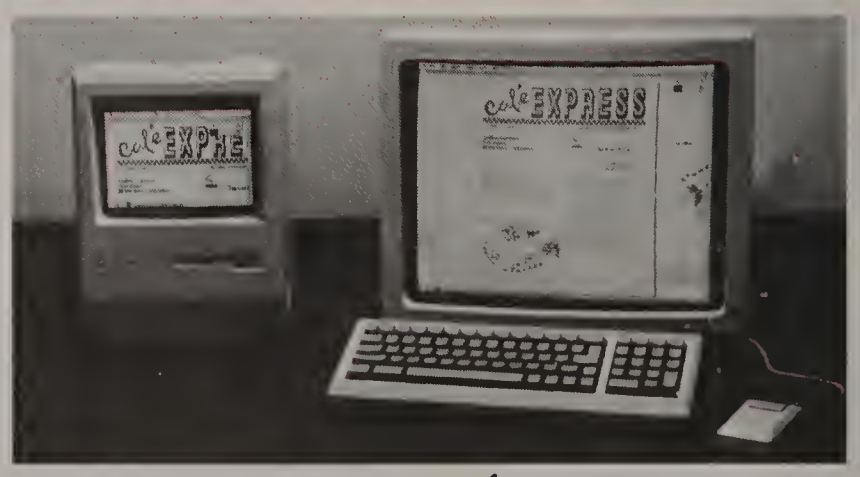


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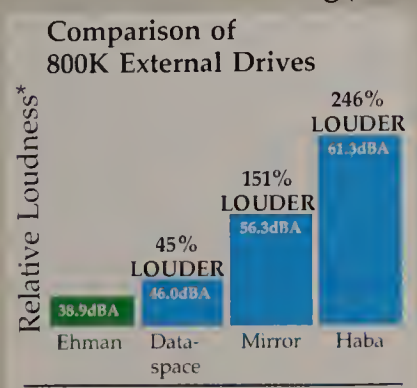


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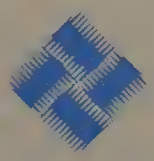

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Circle 602 on reader service card

sharp laser master of the list on paper in the LaserWriter and then copies it onto labels on the shop's Xerox machine.

**Looking Forward** Users report good results for overhead projectors with 3M transparency film type 501. Type 503 melts in the LaserWriter, which settles the "which film?" issue pretty definitely.

**Setting the Right Toner** The dreary reality appears to be that some lucky cartridges produce very good black areas and some just don't. This appears to be a result of delicate thermal and high-voltage manufacturing variables in the cartridge design. You can try breaking in a new cartridge by turning the Print Density setting down and running 100 pages or so through the machine. Some professionals identify especially good "superblack" cartridges and set them aside for critical documents and final artwork. You can also try tilting elderly, fading cartridges according to the procedure outlined hopefully in the manual. It is not likely that good-as-new recharged cartridges will become widely available since several other cartridge components besides toner are used up in printing.

### Oddments

The LaserWriter is nearly the most complex piece of consumer hardware ever presented to the general public, and as a result it has some idiosyncrasies. Virtually all of these have been overcome or turned to advantage by ingenious Mac users.

**Copy-Protection Snags** *ThinkTank*'s copy-protection scheme can interfere with LaserWriter printing. The way around this is to launch *ThinkTank* from *Switcher.* If *Switcher* has a LaserWriter system installed on its disk, *ThinkTank* spools its print jobs to the LaserWriter (use high-resolution mode).

**Systems and PageMaker** Make sure you use System 3.2 with *PageMaker.* Versions 3.0 and 3.1.1 can corrupt documents.

**Reheat and Serve** Unhappily, some early LaserWriter Plus upgrade ROM can be a little flaky. Letting the machine warm up for 15 minutes, then switching it off and on, may circumvent this problem, since a warmed-up ROM is more likely to initialize properly.

**More on Flakiness** In *PageMaker,* sometimes parts of Aldus's font dictionary aren't completely removed from RAM when starting a new printout. The only correction method is to switch the LaserWriter off, then on, and wait 3 minutes.

### United We Stand

We've referred previously to bulletin boards and user groups, and we'll sign off on that theme. Some folks are put off by the technoid aura of the hard-core BBS network, but the fact is that laser printing—and desktop publishing in general—is rapidly evolving, cutting-edge territory. Aldus and Apple monitor the bulletin boards, so why shouldn't you? The people who inhabit this ether are friendly and love to instruct. Any local Mac board has LaserWriter users. In northern California, there's a special LaserWriter bulletin board; its telephone number is 415/261-4813. Nationally, try typing Go MAUG at the CompuServe prompt. A small investment in a CompuServe starter kit—or in a manual like *How to Get the Most Out of CompuServe* by Charles Bowen and David Peyton (Bantam, 1985)—will repay you infinitely in quick access to LaserWriter explorers (not to mention Mac maestros in general). □


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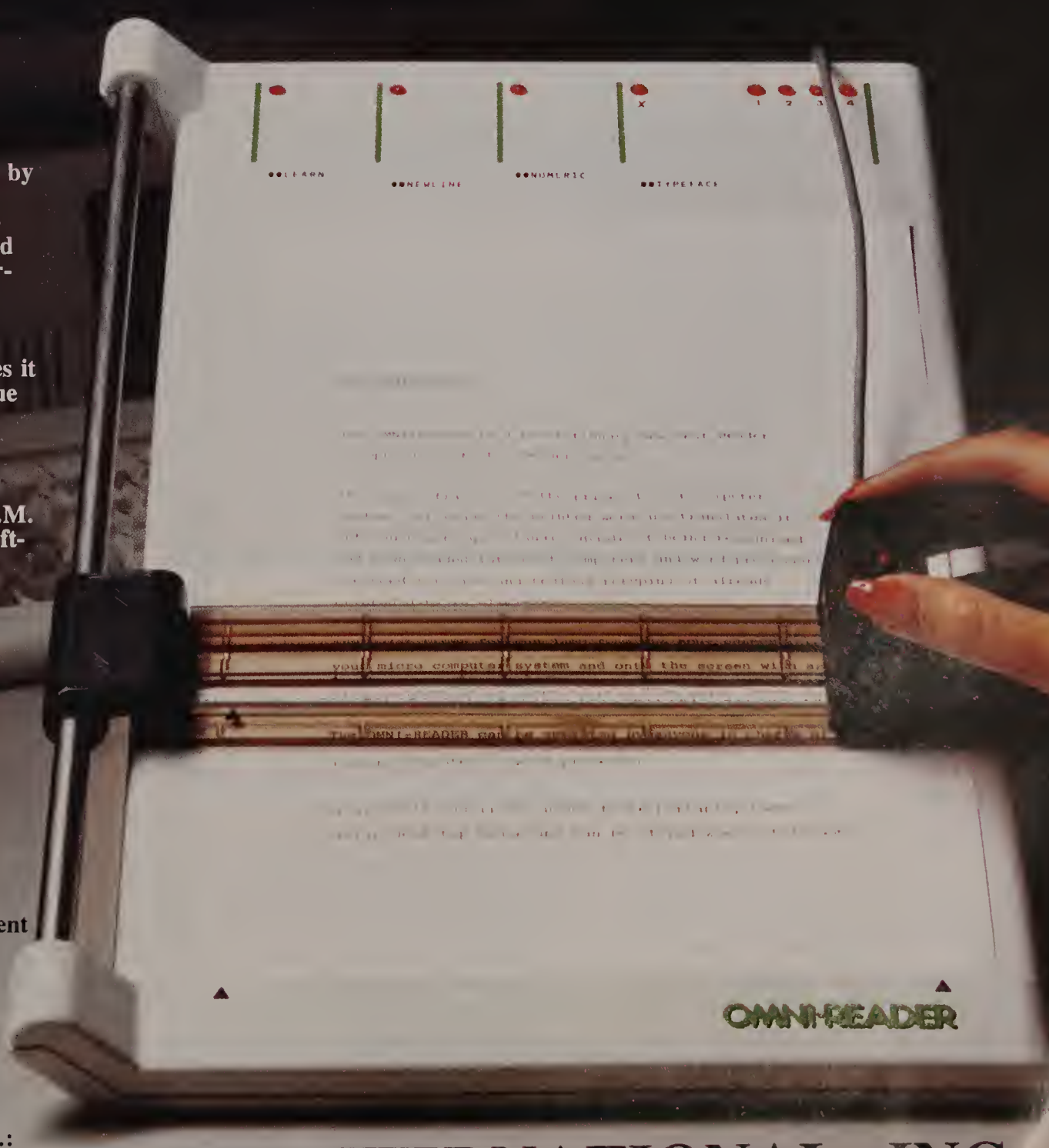


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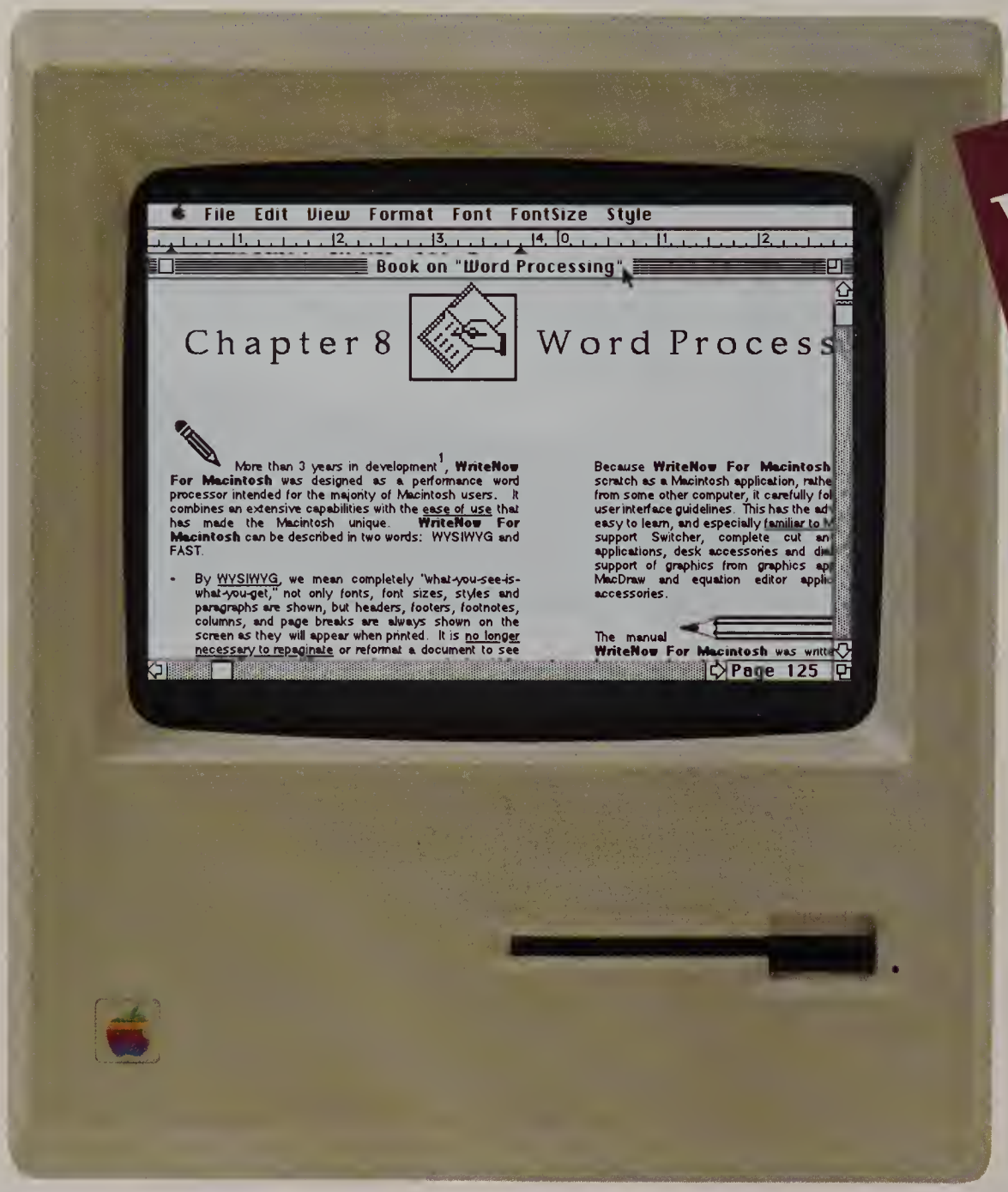


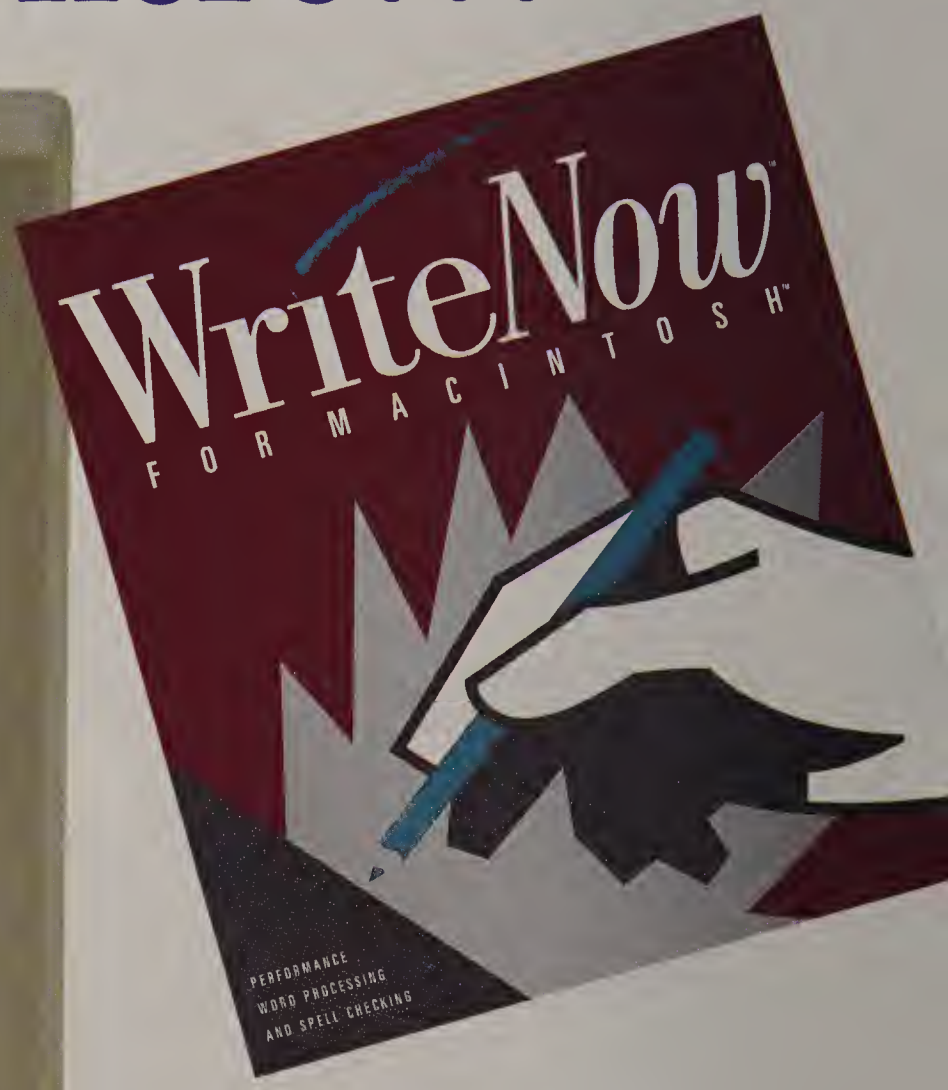


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# Mac Desktop Tools

*Want to save time and disk space? Take a look at ways to avoid the Finder.*

JOHN HERSEY

***by Prasad Kaipa***

Although much can be said for the Mac's desktop analogy, for the most part it's the desktop that's behind the delay when you quit an application. By avoiding the Finder, whose job it is to create the desktop, you can save time. Many alternatives to the Finder speed up tasks like changing from one application to another and even let you copy and delete files from within an application. And because all the alternatives are less than half the size of the Finder, you can save valuable disk space.

In addition to building the desktop, the Finder keeps track of the files and saves information such as which icons to display and the positions of any open windows. The Finder acts as a sort of desktop administrator, helping you manage files and disks. For example, tasks like renaming, duplicating, and trashing files and renaming and ejecting disks all come under the Finder's jurisdiction.

As long as you're at the desktop level, the Finder runs in the Mac's RAM. When you open a document or an application, the Finder launches the application and relinquishes its own space. When you quit the application, the Finder rebuilds the desktop and resumes running.

Normally, the time it takes the Finder to rebuild the desktop when you quit an application is tolerable. However, when you add a hard disk, the number of files grows, increasing the time it takes to return to the desktop. One way around the Finder delay is the MiniFinder, which is a part of the Finder (versions 4.1 and later).

### The MiniFinder

The MiniFinder replaces the Finder's desktop with a window containing up to 12 documents and applications. It won't let you rearrange the positions of the document or application icons as the Finder does; however, you can open items directly. The MiniFinder's speed is evident when you quit an application—you return to the MiniFinder in a fraction of the time it takes to return to the Finder.

While the MiniFinder lets you move more quickly from one application to another, you lose the capability to view all the files and folders on the desktop. Furthermore, you can access desk accessories only from within applications.

To access documents and applications that don't appear in the MiniFinder's window, you can either choose Open Other and select the file from the scrollable list or return to the Finder. While it is possible to circumvent the 12-file limit by building a hierarchy of MiniFinder windows (see "A Hierarchy and 20 Megabytes," January 1986), removing and replacing applications can be tedious.

*(continues)*

### Tiny Finder

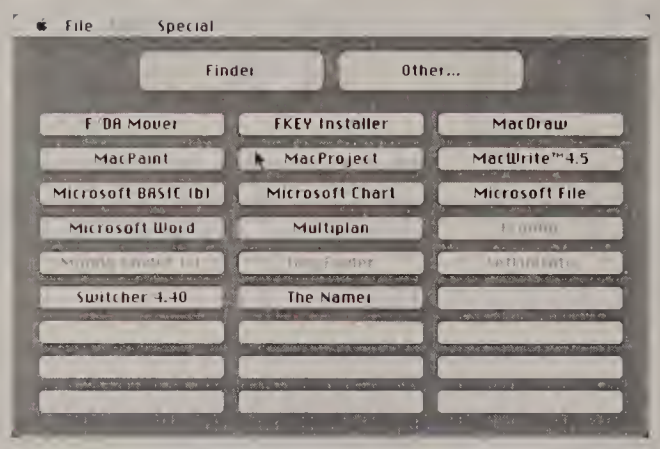
*Tiny Finder* is a public domain program available from user groups and bulletin board systems. You don't need to install applications as you do with the MiniFinder—all the applications on the start-up disk are always accessible. You can freely add and delete applications, as well as access desk accessories and function-key commands, called F-keys; for example, the Save Screen command (⌘-Shift-3).

The speed with which you can move between applications is comparable to that of the MiniFinder. You can use *Tiny Finder* to replace the Finder by naming it MiniFinder or Finder, or it can reside alongside the Finder on the disk.

One disadvantage of *Tiny Finder* is its inability to show the applications by icon; only the file names appear in the window. Also, you cannot open documents directly; you must first open the application.

### zFinder

The smallest of the Finder alternatives, *zFinder* was written by Joel McNamara at the University of Utah and is in the public domain. It occupies only 1K, and with it you can open any application via a dialog box.




***Waystation Window***

Waystation *is a hands-down winner in the category of alternate Finders. This shareware selection allows applications from different volumes to be accessed and is easy to install and remove. Applications contained in volumes that are not on line are shown in gray.*

*zFinder* doesn't require any special installation—you simply replace the Finder with *zFinder* and rename the latter Finder. You can access any application but no documents or desk accessories from *zFinder*. Although it was written primarily for running large programs on a Macintosh with a single 400K disk drive, *zFinder* is useful whenever you're short on disk space.

### Waystation

*Waystation* is offered as shareware—you send $10 to the developer if you find the program useful. The current version (2.3) lets you access up to 27 applications, surpassing the MiniFinder's 12. And you can easily add or remove applications.

Unlike *Tiny Finder* and *zFinder, Waystation* displays the application names in a full-screen window rather than in a dialog box (see "Waystation Window"). While you can open any of the 27 applications and access desk accessories and F-keys from the *Waystation* window, you can't access documents directly. The Other option lets you access applications other than those installed; alternatively, you can go to the Finder.

*Waystation* includes a feature not found in the other Finder alternatives. If 2 minutes pass with no mouse or keyboard activity, *Waystation* blanks the screen.

*Waystation* is incompatible with some desk accessories and electronic mail programs, such as *inBox*. If you move an application from one folder to another, you

*(continues)*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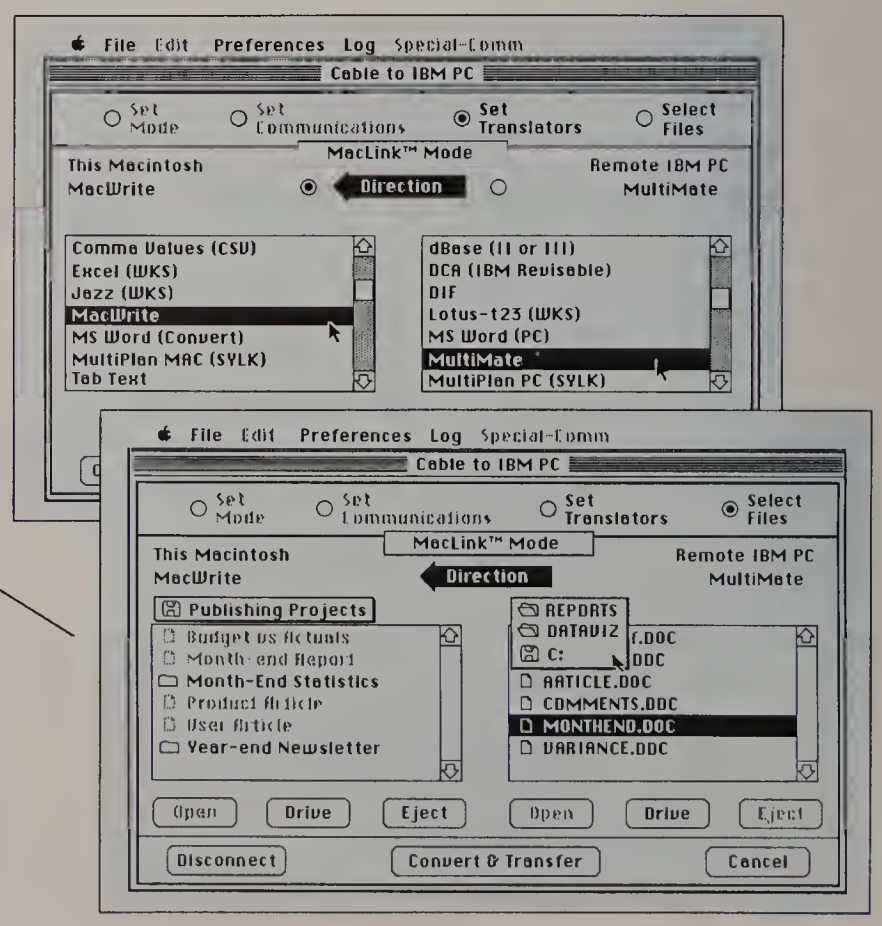


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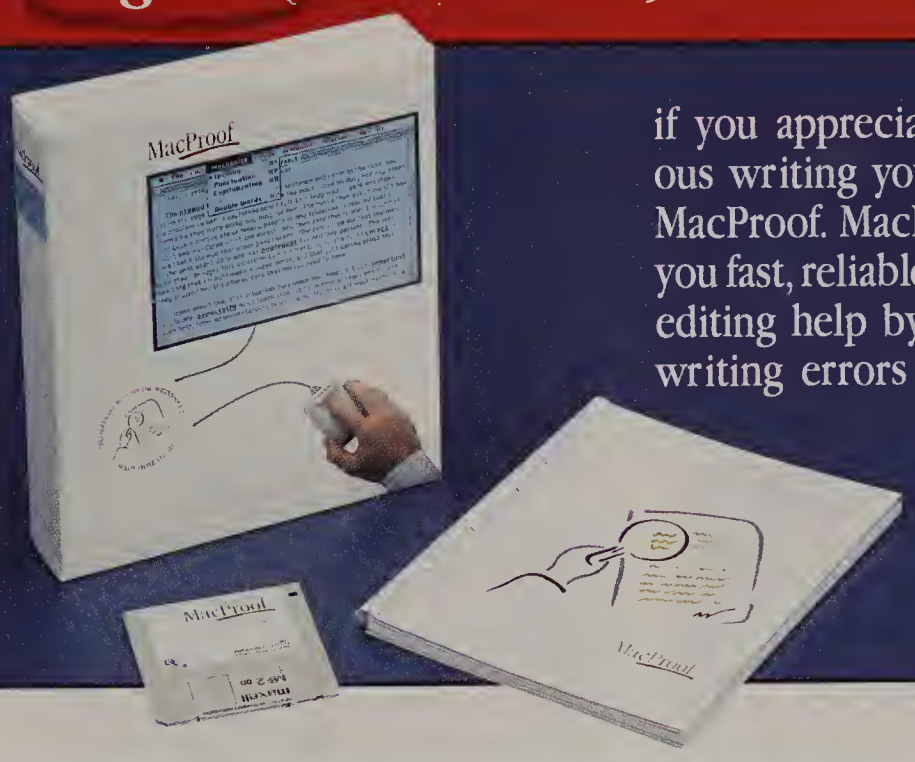


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**Circle 610 on reader service card**

must remove and reinstall it in *Waystation*.

I found that the best way to work with *Waystation* is to rename it MiniFinder and leave it in the System Folder so that when you quit an application, you return to *Waystation*.

### Mighty Finder

With the feature-laden *Mighty Finder,* you can display all the files in any mounted volume, select and view files, or eject disks. You can view file information such as file size, creation date, and modification date. In addition, you can edit the file's type and creator and see whether the file is invisible or locked or if its bundle bit is set.

Like the Finder, the 14K *Mighty Finder* lets you launch applications, copy and rename files, and use F-key commands. But it won't let you access desk accessories. Because version 1.1 was created before the introduction of the Hierarchical File System (HFS), it shows only files available at the desktop level. If you use a Mac Plus or a 512K Enhanced, you will not be able to see files within folders. For this reason, *Mighty Finder* is for 128K or 512K Mac owners only.

### FlashFinder

*FlashFinder* from Unicom is one of the few Finder alternatives available commercially. *FlashFinder* presents you with a dialog box from which you can launch an application, go to the file manager, or select a desk accessory. You can also go to the Finder directly. Once you are in the file manager, you can copy, rename, or delete files as well as launch applications. You can even use the Edit menu and shut down.

Though the version I tested (2.1) was developed in 1985, it worked with HFS without any problem. Overall, *FlashFinder* is fast, and I recommend it.

### SkipFinder

Unlike the previously mentioned Finder alternatives, *SkipFinder* is a desk accessory. It offers commands to access all your files, change drives, eject a disk, and reboot the Macintosh. Because you can access *SkipFinder* from within an application, you can move directly to another application without passing through the Finder. While *SkipFinder* is slower than the MiniFinder, it's much faster than the Finder for switching applications.

### Q&D Filer

*Q&D Filer* is included as a desk accessory with *Quick and Dirty Utilities Volume 1* from Dreams of the Phoenix. *Q&D Filer* lets you bypass the Finder and go directly to another application. Unfortunately, if you transfer to another application without first closing the document you're working on, you lose the file.

*Q&D Filer* also includes file management functions. You can copy, delete, and rename files, as well as get information on files, disk space, and free memory. Printing a text document from within an application is also possible.

### Managing Files with DAs and F-keys

Several desk accessories and F-keys let you copy and delete files and check disk space from within an application (see "File-Management Desk Accessories"). Others let you compact memory, check free mem-

*(continues)*


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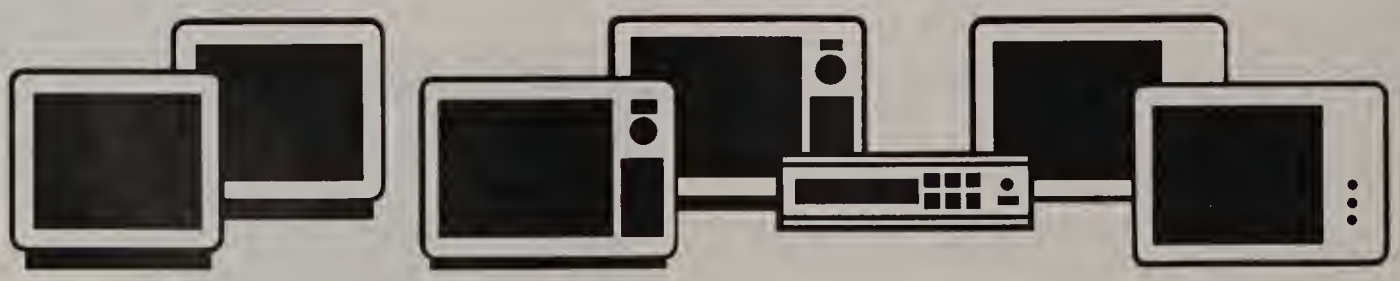

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| **IBM Compatible Monitor** | IBM Compatible Video | 5 Monitors |
| **High Speed Compatible Monitor** (22.25 KHZ Horizontal scan rate) | High Speed Composite Video | 10 Monitors |
| **Color Monitor** (RGB) | RGB Video | 5 Monitors |

*Maximum number of devices per output is a function of device type and impedance.

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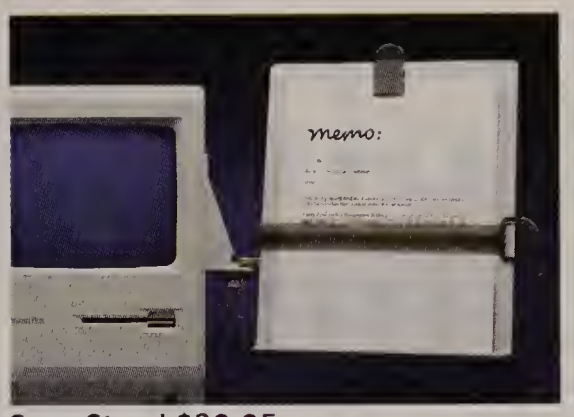


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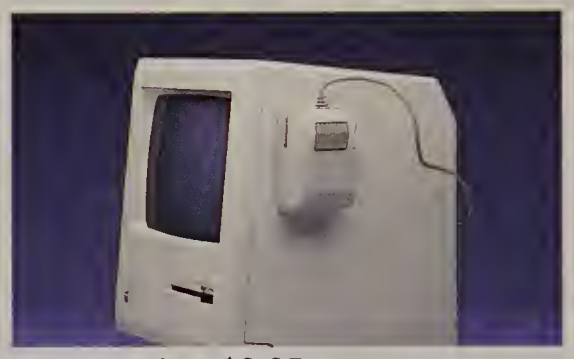

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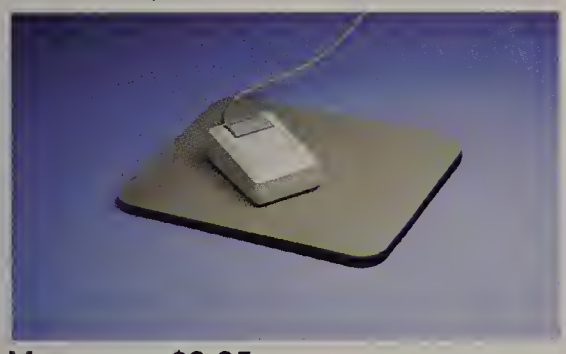

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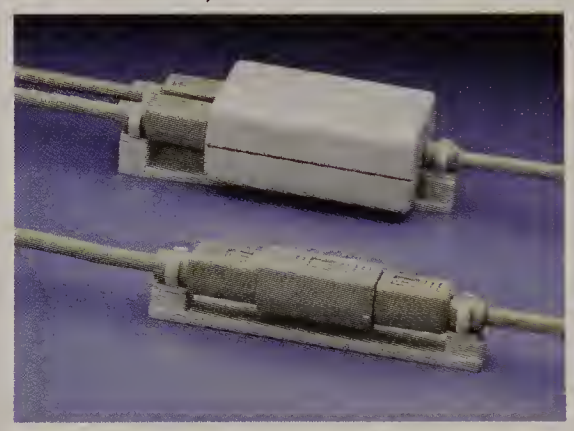

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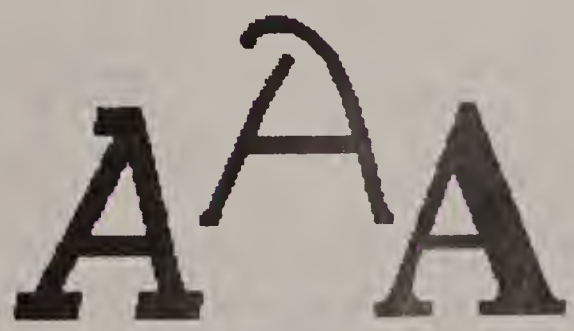

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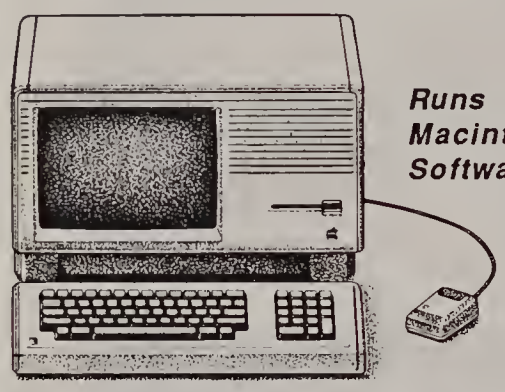

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|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Copy | | | | ● | | ● | ● | ● | ● | ● | ● | ● |
| Delete | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Rename | ● | ● | ● | ● | ● | | ● | ● | ● | ● | ● | ● |
| Free memory information | ● | ● | ● | | | ● | | | | ● | | ● |
| Disk space | | | ● | | ● | ● | | ● | ● | ● | ● | ● |
| File-size information | ● | | ● | | ● | ● | | ● | | ● | ● | ● |
| Launching applications/Set or Quit file | | ● | | | | | | ● | | | | ● |
| Create new folders | | | | ● | | | | | | | | |
| Locate files | ● | | | | | | | | | | | |
| File attributes | | | | ● | | | | ● | ● | | ● | |

***File-Management Desk Accessories***

*Desk accessories let you perform Finder-like tasks such as copying, renaming, and deleting files; creating new folders; displaying file information; and launching applications.*

ory, create a new folder, set file attributes, and trace the file-folder paths of a particular file. Some desk accessories, like *DeskZap,* even strip and add line feeds and control characters to files (see "Managing Files").

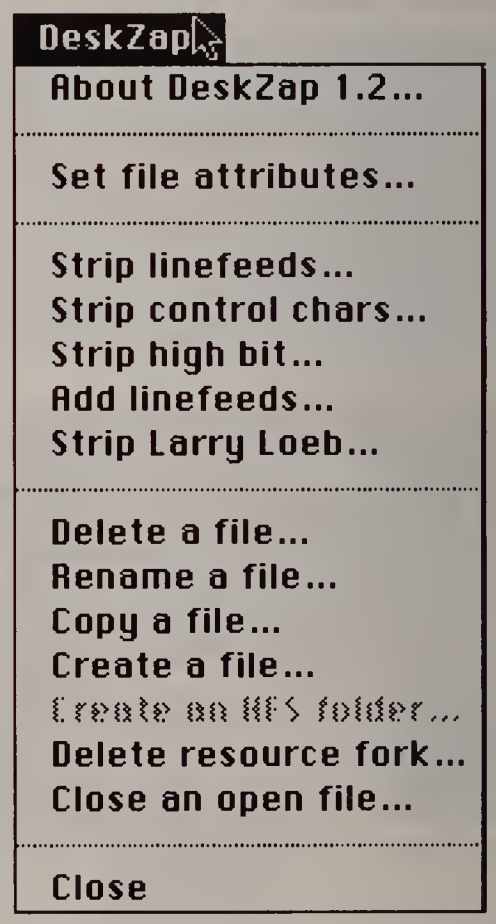
Many F-keys are available from *Quick and Dirty Utilities,* volumes I and II. You can install F-keys with *FKey Installer,* also from Dreams of the Phoenix. The most common way to install desk accessories is to use Apple's Font/DA Mover.

Keep in mind that you can install only 15 desk accessories or 6 F-keys in the System file. The limit is even lower with the HyperDrive and some electronic mail and outline desk accessories, which take up the space of two or three desk accessories. You should also avoid installing too many accessories if you want to conserve disk and memory space. To avoid such space problems, desk accessories like *Other . . . , FKey Runner,* and *Run'r* allow you to use accessories and F-keys that are not installed in the System file; however, you may find problems with certain combinations. For example, *Other . . .* had problems with Microsoft products, and *Run'r* would not work properly with *Waystation.*

### Finders to Go

My choice for an alternate Finder is *Waystation,* because of its ease of use and its frequent updates. For file management within applications, I use *DiskInfo* for its Find feature, along with *DeskZap* for copying and manipulating files. Among the commercial desk accessories, *Q&D Filer* is worth having, but it's only available in a package with 15 other utilities. I use *Run'r* to access other F-keys and desk accessories that are not installed in my System file. *FKey Runner* from *Quick and Dirty Utilities* is the commercially available equivalent.

These are just my personal choices, so you may want to explore your local public domain library and software supplier for other alternatives. And once you've tried one, you may not need to go back to the Finder again. □




***Managing Files***

DeskZap *is a 13K desk accessory that can be used for file management. It can do several Finder tasks within an application.*

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| Size (Kbytes) | 88K | | 301K |
| Add Words | Yes | | Yes |
| **Supplementary Dictionaries** | | | |
| Add/Delete Words | Yes | | Not available |
| Edit with word processor | Yes | | Not available |
| Maintain multiple dictionaries | Yes | | Not available |
| **Learned Words (expander)** | | | |
| Add/Delete Words | Yes | | Not available |
| Edit with word processor | Yes | | Not available |
| Maintain multiple dictionaries | Yes | | Not available |
| **Features** | | | |
| Interactive Spell Checking | Yes | | Yes |
| Typing monitor | Smart | | Smart |
| Check Selection | Yes | | Yes |
| Correct Selection/paste in | Yes | | No |
| Add word with suffixes | Yes | | No |
| Configurable Options | 18 | | None |
| Word Expander | Yes | | No |
| One-touch correction | Yes | | No |
| Keyboard operation | Complete | | Partial |
| Smart Capitalization | Yes | | No |
| Statistics display including word, sentence, paragraph, syllable count, readability indexes and more | Yes | | No |
| Suggestions for misspellings | look alike/sound alike | | place in dictionary/sound alike |
| Disk Space required | 140K | | 353K |
| **Compatibility** | | | |
| MacWrite™ | Yes | | Yes |
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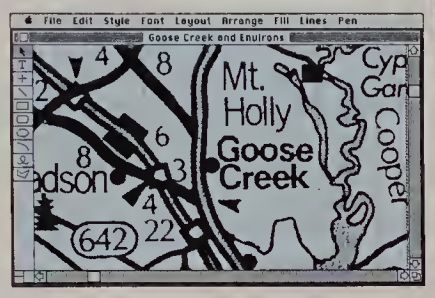


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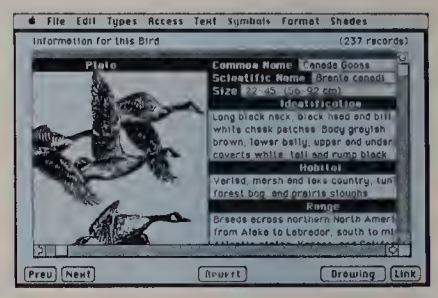
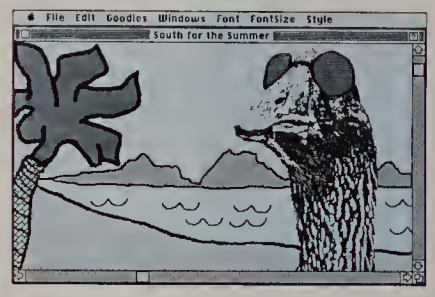



*ThunderScan and Business Filevision*

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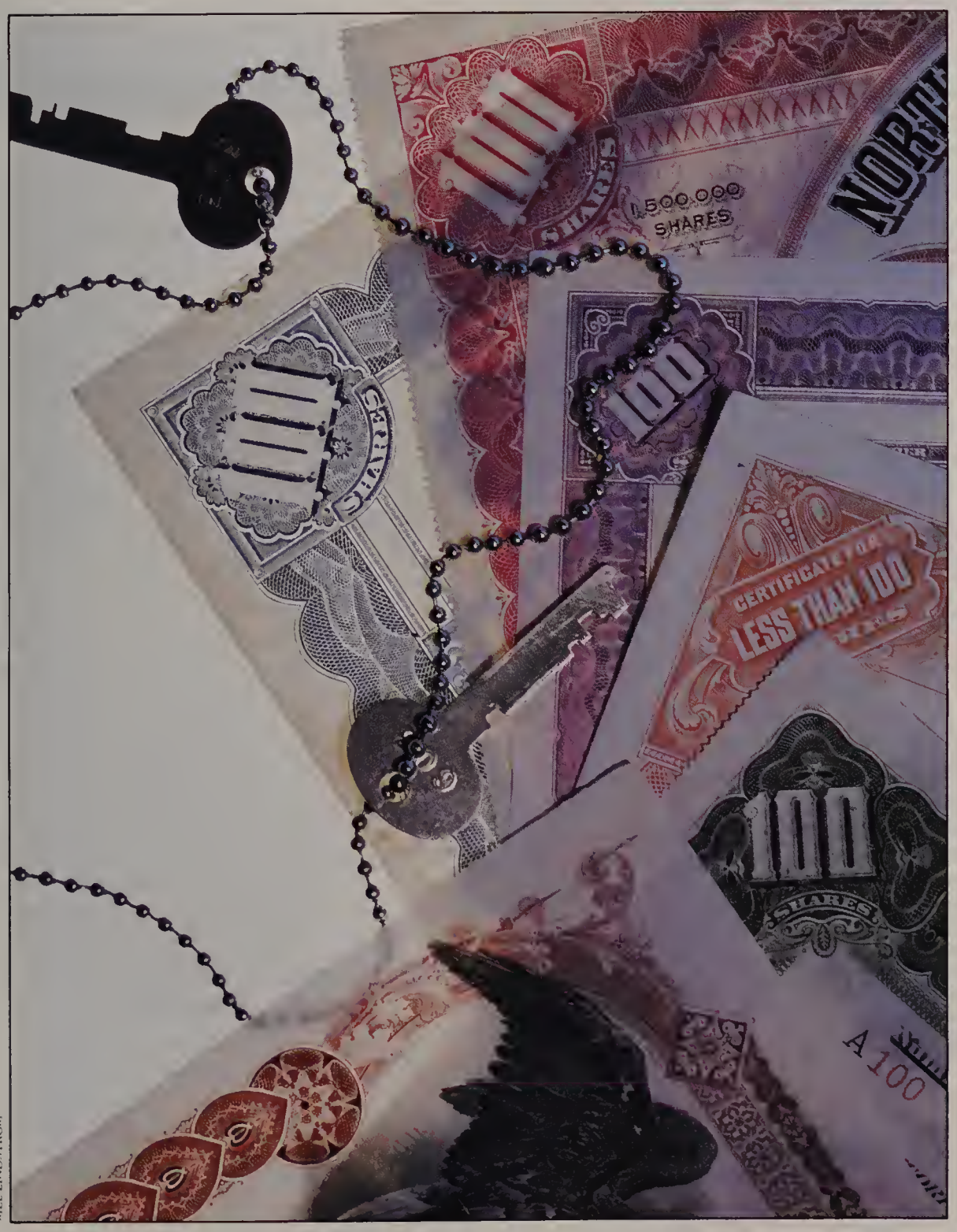
# Mac Finance Tools

## *The highs and lows of Mac stock-market software*

***by Charles Seiter and Daniel Ben-Horin***




MEL LINDSTROM

The computer's role in this world is to help humans cope with tedious, repetitive tasks. Managing your stock portfolio is a case in point. Two kinds of software currently available for the Macintosh can help you automate your investment chores.

*Portfolio managers* keep track of profits, losses, dividends, and other bookkeeping and tax-record matters. These programs automatically log on to financial services such as Dow Jones News/Retrieval or CompuServe, download prices for your stocks, and then perform calculations to assess how those stocks are doing.

*Market analysis software* applies a variety of statistical or other formulas to market and financial data to help you decide which stocks to sell or buy. As you would expect, there is no guarantee of the validity of the forecasts produced by these programs.

### Taking Stock

Without a doubt, automatic portfolio updating is the feature that makes portfolio managers worth having. If you follow more than five stocks, you can definitely benefit from the ability to keep your records and profitability figures current with a minimum of effort.

Some representative portfolio programs are *Market Pro* from Pro Plus Software, *Isgur Portfolio System* from Batteries Included, and *The Investor* from P3 (see Figure 1). These programs—as well as the software listed in "Programs for Profit"—have similar features, and each offers price updating as a simple menu choice. In addition, all the programs can handle larger portfolios than you are likely to maintain (several hundred stocks). In the final analysis, these programs are distinguished

*(continues)*

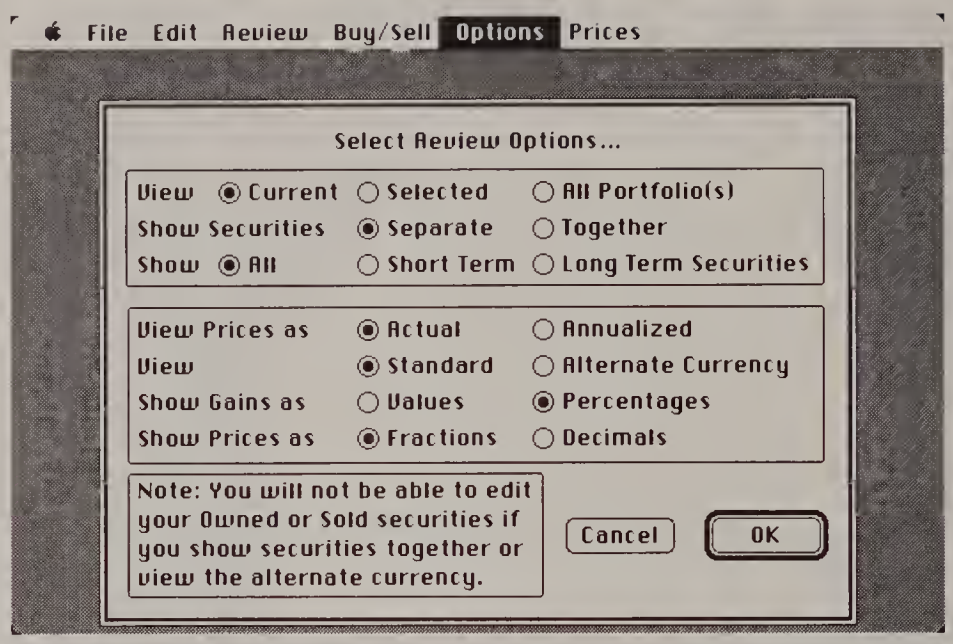



***Figure 1***
*The Options menu from* The Investor. *A portfolio manager typically tracks various types of accounts and provides reports that tabulate your results in different investment areas.*

mainly by the convenience of their communications modules. Accordingly, this should be one of your major selection criteria.

If you're a student of the market or want to research a stock without risking anything, one application of automatic quote updating you might consider is *paper trading.* Paper trading simply means that you pick stocks without actually buying them and follow your selections to triumph or disaster. With a portfolio manager, you can avoid the tiresome record-keeping this practice usually entails, and still reap the educational–and ultimately remunerative–benefits. With portfolio managers that also track cash accounts, such as *The Investor,* you can compare your investment results to simple time deposits or T-bills.

Portfolio managers currently include many bookkeeping features that will soon be obsolete. Until 1986, a strong point of this type of software was its ability to track short- and long-term capital gains and losses for tax purposes. But the tax distinctions between different kinds of income have been eliminated by the new tax laws.

### Crystal Ball Software

For years investors have used a range of statistical practices to predict market movements and action in individual stocks. In general, these methods fall into two groups.

*Fundamental analysis* is a technique whereby you look for a company that meets certain financial criteria and then

## Programs for Profit

In addition to the software packages discussed in this article, a number of other Mac investment packages deserve to be mentioned.

Among portfolio managers, there are *Stock Portfolio System* and *Market Link* from Smith Micro Software; *Soft Start Personal Finance* from Allegro; *Investment Planning Series* from Apropos Software; *Stock Option Planner* from TaxCalc Software; and *Dow Jones Market Manager Plus* from Dow Jones.

Representatives of the investment analysis category include *Investment IRR Analysis* by Larry Rosen Company; *Commodities Charting* by Hutch Computer Industries; and *Twelve C Financial Desk* from Mark of the Unicorn.

*(continues)*

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decide whether its stock is over- or undervalued. In *technical analysis,* by contrast, you examine a company's stock price over time as simply a series of numbers (a time series). The premise of technical analysis is that statistical examination of price information alone can pick out reliable trends. Both methods have their enthusiastic proponents, and both have produced alluring successes as well as disheartening failures.

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For "technicians," *Profit Stalker II* from Button.down Software offers somewhat more advanced technical-analysis capabilities than *Market Pro* (see Figure 3). It also provides automatic downloading of stock data from on-line services, as well as extended plotting and data-treatment facilities. *Profit Stalker II* generates all the forecasting charts associated with stock-tip newsletters, and its helpful manual makes it a friendly introduction to this mysterious pastime.

Hard-core technical analysts may be satisfied with nothing less than the statistical time-series analysis package *Forecasting and Time-Series* from Lionheart. (*Sales and Market Forecasting,* also from Lionheart, provides a similar repertoire of techniques.) *Forecasting and Time-Series* is a professional system for analysis of time-series data and comes with a good selection of sample data, including some stock market examples. The program doesn't capture on-line stock data directly; you have to capture data to a spreadsheet and

*(continues)*


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| Quick & Dirty Utilities Vol. 1 or 2 | 27.00 |
| **FWB Software** Hard Disk Util | 57.00 |
| Hard Disk Backup | 39.00 |
| Hard Disk Partition | 39.00 |
| **Hayden** MUD *(MacroMind Utility Disk)* | 29.00 |
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| **Kent Marsh Ltd.** MacSafe | 49.00 |
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| Macintosh 68000 Development System | 159.00 |
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| **Microsoft** Microsoft Basic *(Version 2.1)* | 89.00 |
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| **TML Systems** TML Pascal V2.0 | 69.00 |
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| **Blythe Software** Omnis 3 Plus | 279.00 |
| Minis 3 Multiuser *(2-5 Users, Specify MacServe or Corvus)* | 569.00 |
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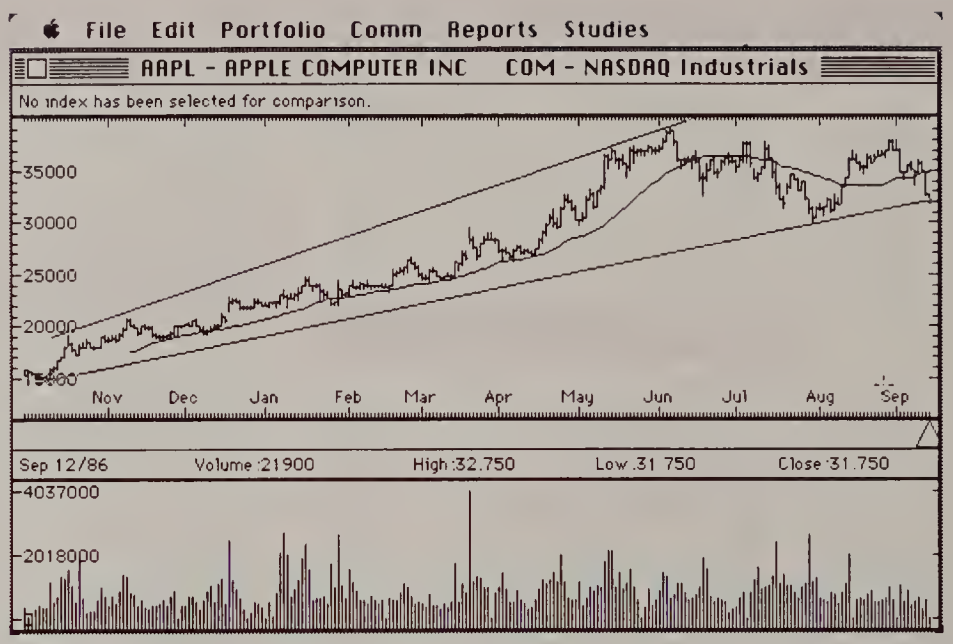


***Figure 2***
*This technical chart from* Market Pro *shows stock price, moving average (a smoothed-out record of prices), and support and resistance lines. When the price breaks past these lines, "technicians" believe that a new buying or selling trend has started.*

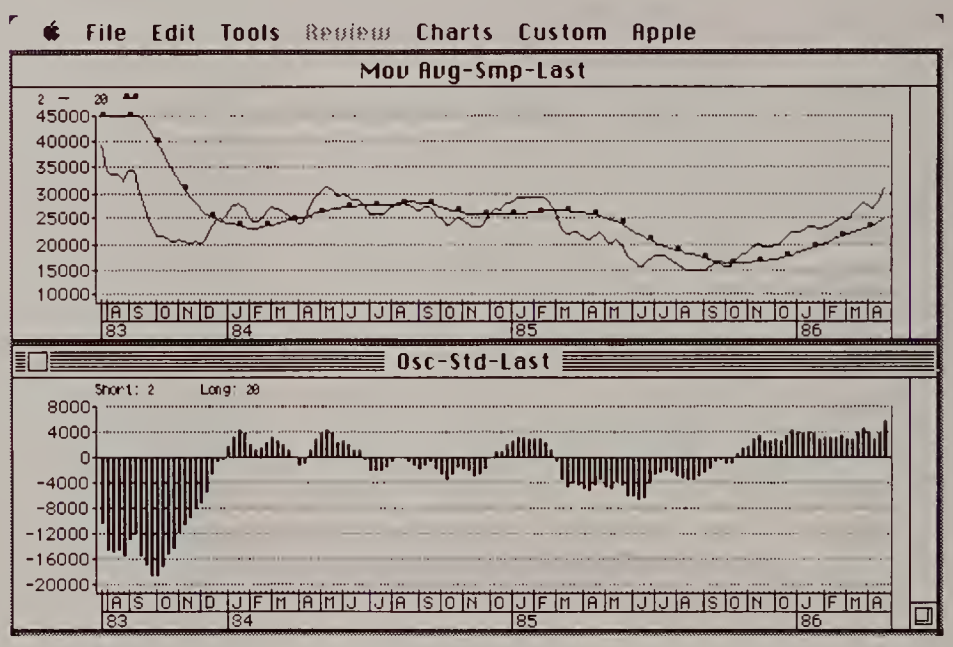


***Figure 3***
Profit Stalker II *can put two charts on the same page. These charts both report the difference between long-term and short-term moving averages.*

transfer it. This limitation is a major nuisance if you are investigating more than three or four stocks. The package assumes that you are familiar with the contents of a college-level business statistics text.

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| | | DS/DD | $24.95 |
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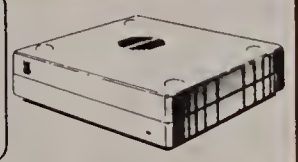

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| MAXELL | SS/DD | 13.45 | 12.95 | 12.45 |
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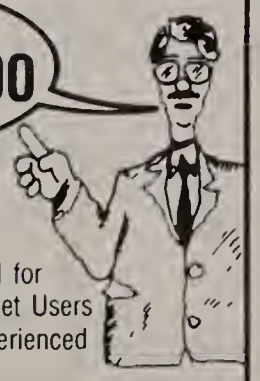

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# Updates

*This list brings you highlights of software recently received but not yet tested. The first price is the upgrade cost for registered owners; the second is the current list price.*

**Acta** version 1.1 scrolls when you pull the pointer to the extreme top or bottom of the window; the list of fonts also scrolls. You can also designate an *Acta* file to open automatically on start-up. Symmetry Corporation, 761 E. University Dr., Mesa, AZ 85203, 800/624-2485, 602/844-2199 in Arizona. Original disk swap or $10; $59.95 new.

**Fluent Laser Fonts** 1.0 versions download automatically and are compatible with the new (3.0 and later) versions of LaserWriter system software and *PageMaker* version 1.2. There are now six disks offering eight families of type; Sans Serif and Bodoni come on separate disks, so call to learn about upgrading options for those fonts. Casady Company, P.O. Box 223779, Carmel, CA 93922, 408/646-4660. Original disk plus $7 per disk; $69.95 per disk new.

**FullPaint** version 1.0 Enhanced includes the ColorPrint color-printing utility and removes copy protection. The company asks owners not currently registered to order upgrades by mail by returning registration card, dated invoice, or other proof of purchase. FullPaint Upgrade, Ann Arbor Softworks, 5249 Lankershim Blvd., North Hollywood, CA 91601, 818/769-8615. Free; $99.95 new.

**Mac3D** version 2.0 adds lighting from six sources, PostScript gray-scale shading, a customized tool palette, and orthographic projections, plus custom scaling and commands for importing and exporting graphics in PICT format. Challenger Software, 18350 Kedzie Ave., Homewood, IL 60430, 800/858-9565, 312/957-3475. $30; $249 new.

**Plot-It** version 2 works with documents from *MacDraw* and *MacDraft* version 1.2 in PICT format and with the Clipboard. It's HFS compatible and supports the Apple plotter and various Hewlett-Packard and Houston Instrument DMPL plotters in paper sizes of up to 36 by 48 inches. Mesa Graphics, P.O. Box 600, Los Alamos, NM 87544, 505/672-1998. $30; $125 new.

**Stat80** version 2.10, an upgrade for both the standard and professional editions, adds several types of ANOVA analysis, including N-way, unbalanced factorial, factorial repeated measures, and unbalanced repeated measures. Statware, P.O. Box 510881, Salt Lake City, UT 84151-0881, 801/521-9309, 800/782-8807. Original disk only for those who purchased after August 15, 1986, original disk plus $50 or $75 without disk for earlier purchasers; standard $249 new, professional $399 new.

**Word Handler** version 1.6 allows pasting in text and graphics through the Clipboard, the Scrapbook, and other desk accessories. Then the graphics can be resized or moved horizontally. Conversions from *MacWrite* are faster. Advanced Logic Systems, Attn: Clipboard Upgrade, 1283 Reamwood Ave., Sunnyvale, CA 94089, 408/747-1988. Original disk plus $2; $79.95 new. □

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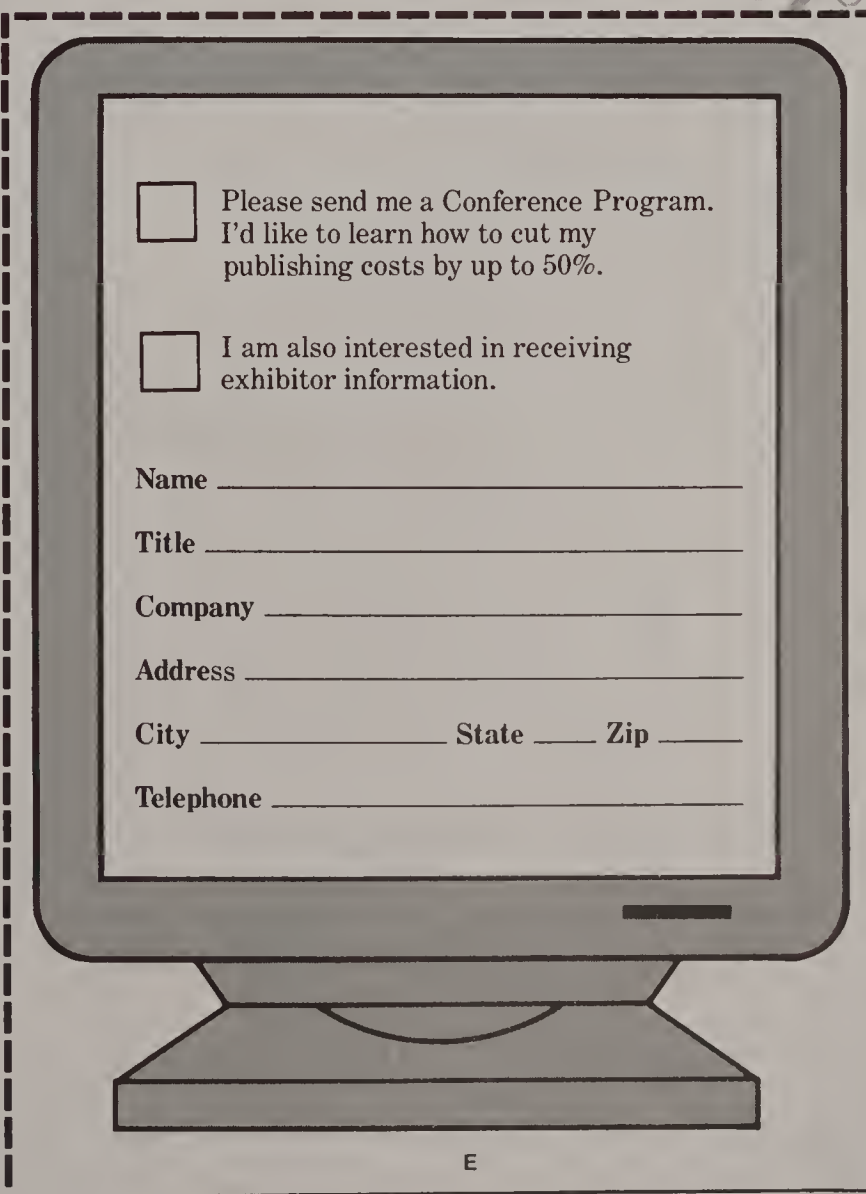

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*The Macworld Directory is a comprehensive listing, by category, of products and services available for the Apple Macintosh. It provides advertisers with a low-cost advertising alternative and our readers with an easy reference guide.*

*FORMAT: The standard format includes a product ID, a 300-character descriptive ad, and a company name, address, and telephone number.*

*Advertisers may choose among categories already in use, or they may create their own. Display advertisers can cross-reference their current ad to the Macworld Directory for increased exposure.*

*RATES: Listings are accepted for a three-time consecutive insertion at a rate of $775. We offer a six-time insertion at $1320 that reflects a 15% frequency discount. Listings must be prepaid (except for established display advertisers) upon submission of ad copy. Checks, money orders, Visa, and MasterCard are accepted.*

*DEADLINE: For copy deadlines and further information please contact Niki Stranz, your Macworld Directory Account Manager, at 415/546-7722 or 800/435-7766 (800/435-7760 in California). Please send copy and prepayment to the Macworld Directory, 501 Second St. #600, San Francisco, CA 94107.*

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*Whisper Microcomputer Products, P.O. Box 162504, Austin, TX 78716-2504, 800/622-2210, 512/329-0303 in TX*

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### ○ *Communications*

#### Tekalike

A VT-100 & Tektronix terminal emulator for text & graphics; emulates text terminals (tty, VT-100, VT-640, Tektronix 4105) &/or graphics terminals (Tektronix 4006, 4010, 4012, 4014, 4016, 4105, & the VT-640). Compatible with screen editors. Supports LaserWriter, plotters, *MacDraw* & *MacPaint* output; desktop publishing compatible. $250.
*Mesa Graphics, P.O. Box 600, Los Alamos, NM 87544, 505/672-1998*

### ○ *Desktop Publishing*

#### DrawArt™

A library of "publishing quality" graphics in *MacDraw* files. More than 150 images in the categories of Publishing, Clip Art, 3-D/CAD, Drafting, Cartoons, & Drawings. *DrawArt*™ is "Smart-Art." Customize sizes, scales, patterns, borders & still retain image quality using ImageWriter or LaserWriter. Req. *MacDraw* & 512K. Order from us. List: $49.95. Visa/MC.
*Desktop Graphics, 400 Country Dr., Ste. H, Dover, DE 19901, 302/736-9098*

### ○ *Educational*

#### Gradebook/Test Generator

MICROGRADE—flexible course & grading, 350 students and 100 assignments per class, prints stats & various reports. Ideal for any grade level. MICROTEST II—create, update, generate, & store exam materials. Easy question entry, large database, multiple test versions. Free brochures—$5 Demos.
*Chariot Software Group, 3659 India St. #MD1, San Diego, CA 92103*

#### Religious & Graphics Series

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*MacConcord* (N.T. concordance) $42.95
*MacScripture* (Old & N.T.) $140
- *Religious Art Portfolio* $24.95
- *Electro Bits* (circuit graphics) $24.95
- *Orlando à la Carte!* (dining guide) $19.95 *MacMundo* (newsletter disk in Spanish) $8
- English or Spanish

*Medina Software, Inc., 2008 Las Palmas Circle, Orlando, FL 32822, 305/281-1557*

#### MacANATOMY

A complete electronic atlas of human anatomy in *MacPaint* document form. The drawings may be modified and merged into *MacWrite* documents using the Clipboard. Comprised of four volumes, available singly or as a collection.
*MacMedic Publications, Inc., 5805 Westheimer, Houston, TX 77057, 713/977-2655*

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- built-in library of common gates, flip-flops, etc.
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*Capilano Computing, 300-1120 Hamilton St., Vancouver, B.C., Canada, V6B 252 604/669-6343*

### Structural

Analysis & design programs. Any # of nodes, elements, loads. Structure, load, tension, shear, moment & deflected shape diagrams, in & out text, section table, more. Full mac interface. FRAME-MAC (2-D frames) $495; BEAMAC II (continuous beams) $295; BEAMAC (simple beams) $95. $-back guarantee. Free support.
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### Scientific Plotting Package

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## ○ *Engineering/Process*

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*Engineering Programming Concepts, P.O. Box 925, Camarillo, CA 93011, 805/484-5381*

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### Downloadable Laser Fonts

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### MGMStation

by Micro CAD/CAM, Inc., is a high-powered, easy-to-use CAD program for the Mac, similar in performance to *AutoCAD* for the IBM PC. *MGMStation* boasts over 140 powerful functions, including XY coordinate, polar, or digital data input; 100× zoom; accuracy to 4 decimals; & much more! Demo disk &/or VCR tape available. $799.
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### MacPlot & MacCAD

*MacPlot* by Microspot is a powerful plotter driver that will plot any object-oriented graphics produced on the Mac in up to 30 colors/pens. Supports over 45 plotters. MacCAD is a series of 12 separate architectural & engineering template libraries for use with either *MacDraw* or *MacDraft* (specify which).
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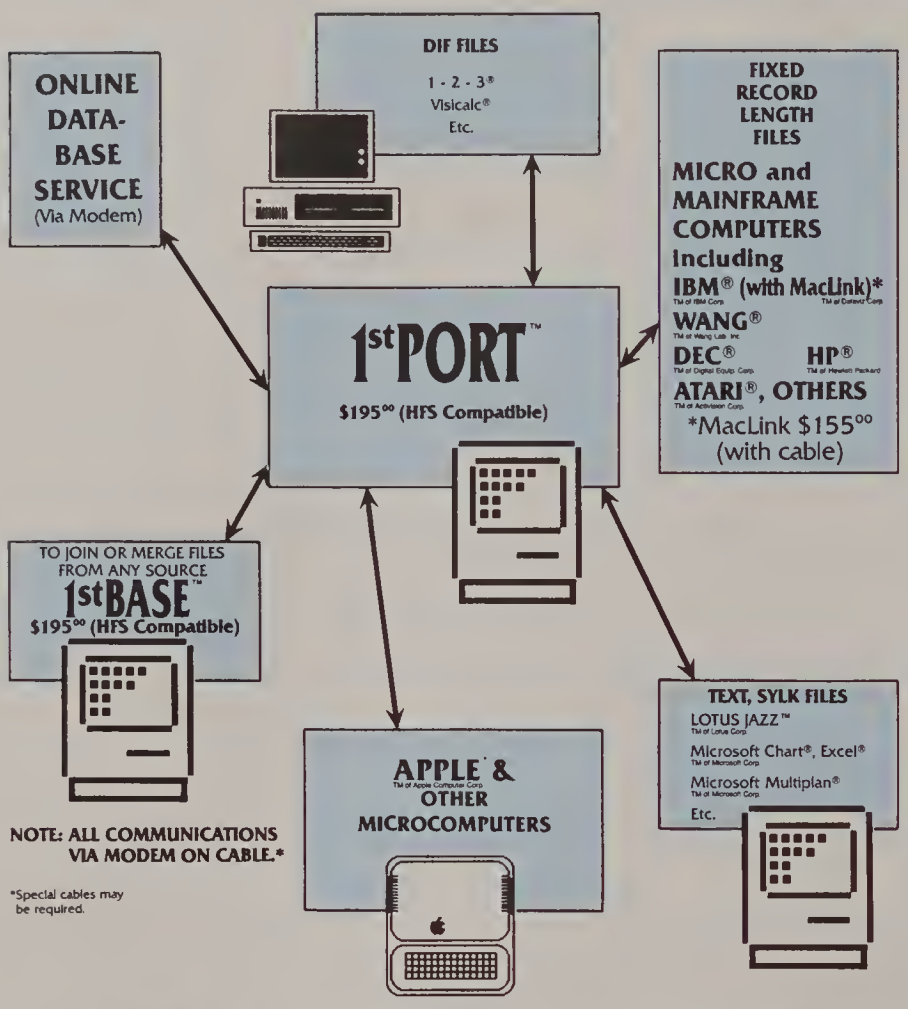


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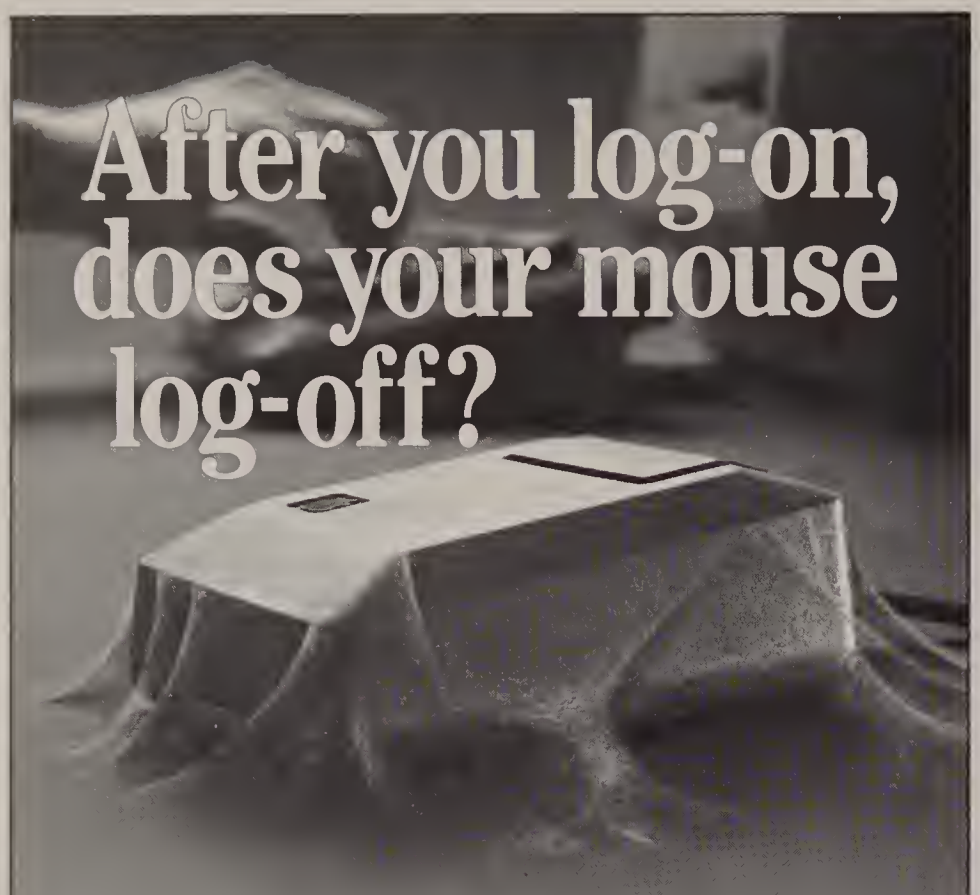

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**Public domain software is available through on-line information services, through user groups such as Berkeley Macintosh Users Group (415/849-2684) or the Boston Computer Society's Mac SIG (617/367-8080), or through mail-order clearinghouses such as Educomp, 2429 Oxford St., Cardiff by the Sea, CA 92007, 619/942-3838, or SoftCore (formerly the Public Domain Exchange), 673 Hermitage Ln., San Jose, CA 95134, 408/942-0309.**

**3Server3**
3Com, 1365 Shorebird Way, Mountain View, CA 94043, 415/960-9451, 800/NET-3COM. Requires 128K ROM and SCSI interface and AppleTalk. For four or more Macs. $5995, 3Server3 Tape Backup $1995.*

**30 XT, 60 XT**
Micah, 2330 Marinship Way #111, Sausalito, CA 94965, 415/331-6422, 800/523-9394. Requires 128K ROM and SCSI interface. 30 XT $1395, 60 XT $4495.

**AMS General Ledger**
Version 2.07. CheckMark Software, Inc., P.O. Box 860, Fort Collins, CO 80522, 303/484-3541, 800/426-2466 ext. 338 (orders only). 128K minimum memory; two drives recommended. $195.*

**Anatool**
Abvent, 9903 Santa Monica Blvd. #268, Beverly Hills, CA 90212, 213/659-5157. Key-disk copy protection. 512K minimum memory; Mac Plus and hard disk recommended. $795.*

**AppleTalk**
Apple Computer, Inc., 20525 Mariani Ave., Cupertino, CA 95014, 408/996-1010. 128K minimum memory. $75.

**AST-2000, AST-4000**
AST Research, Inc., 2121 Alton Ave., Irvine, CA 92714, 714/553-0340. Requires 128K ROM and SCSI interface; HFS only. AST-2000 $2795, AST-4000 $6995.

**Bernoulli Box 10, 10+10, 20, 20+20**
Iomega, 1821 W. 4000 South, Roy, UT 84067, 801/778-1000, 800/446-6342, 800/778-3000. Requires 128K ROM and SCSI interface; HFS only. 10MB $1795, 10+10 $2695, 20 $2395, 20+20 $3495.

**Big Mack Twin Pack**
Western Computer, 17781 Mitchell, Irvine, CA 92714, 714/553-1611. Requires 128K ROM and SCSI interface; HFS only. $1995, Big Mack Twin Pack Plus 40/40 combination $2995.

**The Big Picture**
E-Machines, Inc., 7945 S.W. Mohawk St., Tualatin, OR 97062, 503/692-6656. Key-disk copy protection. 512K minimum memory. $1995.

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**Cirrus 21D, 40FD, 40T**
Kamerman Labs, 7861 S.W. Cirrus Dr., Beaverton, OR 97005, 503/626-6877, 800/522-2237 (orders only). Requires 128K ROM and SCSI interface. Prices to be announced.

**DAFile**
Public domain program by Den Winograd. 128K minimum memory. Available through Delphi (ICONtact), CompuServe (MAUG). Shareware.

**DataFrame 20, 40, 20XP, 40XP**
SuperMac Technology, 950 N. Rengstorff Ave., Mountain View, CA 94043, 415/964-8884. Requires 128K ROM and SCSI interface; HFS only. 20 $1099, 40 $1799, 20XP $1299, 40XP $1999.

**DeskZap**
Version 1.2. Public domain program by Bruce Tomlin. 512K minimum memory. Available through GEnie and Delphi. Shareware.

**The Direct Drive**
Jasmine Computer Systems, 555 De Haro St., San Francisco, CA 94107, 415/621-4339. Requires SCSI interface. 20MB $599, 80MB $1380.

**DiskInfo**
Version 1.43. Public domain program by David Dunham of Maitreya Design. Shareware: $10.

**Disk Tools: Battery Pak**
One of nine desk accessories in Battery Pak. Version 1.23. Batteries Included, 30 Mural St., Richmond Hill, Ontario, Canada L4B 1B5, 416/881-9941, 800/387-5707. 128K minimum memory. $49.95.

**Easy Drive 20, 30, 40**
DCC Systems, 1525-B W. Orange Grove Ave., Orange, CA 92668, 714/771-7851. Requires 128K ROM and SCSI interface. 20 $895, 30 $1295 40 $1695.

**Easy3D**
Version 1.01. Enabling Technologies, 600 S. Dearborn #1306, Chicago, IL 60605, 312/427-0408. 512K minimum memory. $149.

**Ehman 20HD, 40HD**
Ehman Engineering, Inc., 115 Apache Dr., Evanston, WY 82930, 307/789-3830, 800/257-1666. Requires 128K ROM and SCSI interface. 20HD $1295, 40HD $1695.

**Extras**
Version 1.5. Public domain program by Bob Luce. 128K minimum memory. Shareware: $10.

**FileFinder**
Version 2.0. Nashoba Systems, Inc., 175 Sudbury Rd., Concord, MA 01742, 617/371-2028, 800/842-4250. 128K minimum memory. $24.95.

**FileMaker Plus**
Version 2.0. Forethought, 250 Sobrante Way, Sunnyvale, CA 94086, 408/737-7070, 800/MAC-WARE. 512K minimum memory; requires 800K of disk space, two 800K drives recommended. $295.*

**FKey Installer**
Version 1.1. Available on Quick & Dirty Utilities Volume 2. Dreams of the Phoenix, Inc., P.O. Box 10273, Jacksonville, FL 32247, 904/396-6952. 128K minimum memory. $39.95.

**Forecasting and Time Series**
Version 4.0. Lionheart Press, Inc., P.O. Box 379, Alburg, VT 05440, 514/933-4918. 128K minimum memory; 800K drive, modem recommended. $145, with Sales and Market Forecasting $200.

*(continues)*

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## Where to Buy

**FullPaint**
Version 1.0E. Ann Arbor Softworks, Inc., 5249 Lankershim Blvd., North Hollywood, CA 91601, 818/769-8615. 512K minimum memory. $99.95.

**Generic Drive 20**
Trimar USA, Inc., 236 W. 15th St., New York, NY 10011, 212/872-4454, 800/872-4454. Requires 128K ROM and SCSI interface. $850.

**GraphicWorks**
Mindscape, Inc., 3444 Dundee Rd., Northbrook, IL 60062, 312/480-7667, 800/443-7982, 800/654-3767. 512K minimum memory. $79.95.

**Hard 20 Plus**
Relax Technology, Inc., 3101 Whipple Rd. #22, Union City, CA 94587, 415/471-6112, 800/848-1313. Requires 128K ROM and SCSI interface; HFS only. $1195.

**Hard Disk 20SC**
Apple Computer, Inc., 20525 Mariani Ave., Cupertino, CA 95014, 408/996-1010. Requires 128K ROM and SCSI interface. $1299.

**HardMAC + 20, + 40**
CMC Computer Systems, 1514 E. Edinger, Ste. H, Santa Ana, CA 92705, 714/835-2462. Requires 128K ROM and SCSI interface; Mac Plus recommended; HFS only. + 20 $595, + 40 $995.

**HD-20, 30, 40, 60; HDT 30/40, 60/40**
MDIdeas, 1111 Triton Dr. #205, Foster City, CA 94404, 415/573-0580. Requires 128K ROM and SCSI interface. HD-20 $1095, HD-30 $1595, HD-40 $1995, HD-60 $2995, HDT 30/40 $2995, HDT 60/40 $3995.

**HyperDrive FX/20**
General Computer Corp., 215 First St., Cambridge, MA 02142, 617/492-5500. 1MB minimum memory; HFS only. $1199.

**The Investor**
Version 1.14. P3, Inc., 309 North Bluff, Wichita, KS 67208, 316/686-2000. 512K minimum memory; requires 800K drive; modem recommended. $150.

**Isgur Portfolio System**
Version 1.0. Batteries Included, 30 Mural St., Richmond Hill, Ontario, Canada L4B 1B5, 416/881-9941, 800/387-5707. 512K minimum memory; requires 800K drive. $199.95.

**LetraPage**
Prerelease version 1.0. Letraset, 40 Eisenhower Dr., Paramus, NJ 07653, 201/440-8620. Key-disk copy protection. 512K minimum memory; hard disk recommended. $495.

**LoDown SCSI drives**
LoDown, 10 Victor Square #200, Scotts Valley, CA 95066, 408/438-7400. Requires 128K ROM and SCSI interface. 20 $995, 30 $1295, 40 $1995, 60 $2495, 80 $3995; Combo 20/20 $1795, 20/50 $2195, 30/20 $2095, 30/50 $2495; T-20 $895, T-50 $1295.

**Mac3D**
Version 2.0. Challenger Software Corp., 18350 Kedzie Ave., Homewood, IL 60430, 312/957-3475, 800/858-9565. 512K minimum memory; requires two drives. $249.

**MacBack + 20, + 60**
Peripheral Land, 3677 Enochs St., Santa Clara, CA 95051, 408/733-7600. Requires 128K ROM and SCSI interface. + 20 $995, + 60 $1695.

**MacBillboard**
Version 4.01. CE Software, 801 73rd St., Des Moines, IA 50312, 515/224-1995. 512K minimum memory. $35.*

**MacBottom SCSI**
Personal Computer Peripherals Corp., 6204 Benjamin Rd., Tampa, FL 33614, 813/884-3092, 800/622-2888. Requires 128K ROM and SCSI interface; Mac Plus recommended; MFS compatible only with additional software. $1195.

**MacEqn**
Version 1.9. Software for Recognition Technologies, 110 University Park, Rochester, NY 14620, 716/461-0923. 128K minimum memory; 512K recommended. $44.95.*

*(continues)*

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*— Infoworld*

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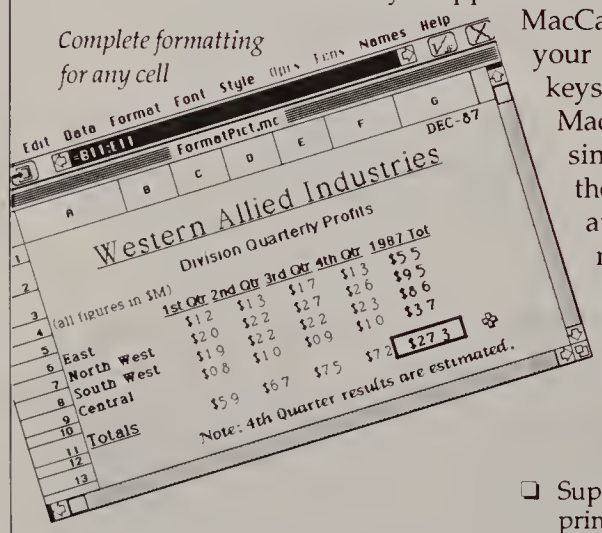


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*— Infoworld* software review, 3 November 1986

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## Where to Buy

**MacFast 20, 30, 80;**
**MacBack 20, 60**
Peripheral Land, 3677 Enochs St., Santa Clara, CA 95051, 408/733-7600. Requires 128K ROM and SCSI interface. MacFast 20 $1395, 30 $1695, 80 $2995; MacBack 20 $995, 60 $1495.

**MacMate 20**
Relax Technology, Inc., 3101 Whipple Rd. #22, Union City, CA 94587, 415/471-6112, 800/848-1313. Requires 128K ROM and SCSI interface; HFS only. $995.

**MacPaint**
Version 1.5. Apple Computer, Inc., 20525 Mariani Ave., Cupertino, CA, 95014, 408/996-1010. 128K minimum memory. $125.

**MacSpace**
Version 1.0. Abvent, 9903 Santa Monica Blvd. #268, Beverly Hills, CA 90212, 213/659-5157. 512K minimum memory; Mac Plus and plotter recommended. $385.

**MacStore 10 Removable**
Peripheral Land, 3677 Enochs St., Santa Clara, CA 95051, 408/733-7600. Requires 128K ROM and SCSI interface. $1995.

**MacTex**
Version 1.1. FTL, 234 Eglinton Ave. E #205, Toronto, Ontario, Canada M4P 1K5, 416/487-2142. 1MB minimum memory; requires external drive; hard disk and LaserWriter recommended. $750.

**Magic 20, 30, 65, 234**
Rabbit Industries, 3845 Spicewood Springs Rd. #304, Austin, TX 78759, 512/343-0781, 800/622-3475. Requires 128K ROM and SCSI interface. Magic 20 $699, 30 $899, 65 $1399, 234 $3399.

**MagNet SCSI Drives, Magnum Tape 20**
Mirror Technologies, 2209 Phelps Rd., Box 304, Hugo, MN 55038, 612/426-3276, 800/328-6795 ext. 428 (orders only). Requires 128K ROM and SCSI interface; Mac Plus recommended; HFS only. 20X $1095, 30X $1195, 40/40 $3195, 85X $5295, 172X $6495; Magnum Tape 20 $1195, 20X with *MacServe* (MFS compatible) $1195, 30X with *MacServe* $1295.

**Market Pro**
Version 1.0. Pro Plus Software, 2830 E. Brown Rd. #C-12, Mesa, AZ 85203, 602/830-8835, 800/992-2919. 512K minimum memory; requires modem; Mac Plus recommended. $395.

**MegaScreen**
Version 2.2. MicroGraphic Images, 20954 Osborne St., Canoga Park, CA 91304, 818/407-0571. 1MB minimum memory. $2995.

**MacPaint**
Version 1.5. Apple Computer, Inc., 20525 Mariani Ave., Cupertino, CA, 95014, 408/996-1010. 128K minimum memory. $125.

**Mighty Finder**
Version 1.1. Public domain program by Eagle I. Berns.

**MiniDOS**
Public domain.

**Omnis 3 Plus**
Version 3.23. Blyth Software, Inc., 2929 Campus Dr. #425, San Mateo, CA 94403, 415/571-0222. 512K minimum memory; hard disk recommended. $495, multiuser version (2 to 63 users) $990-$2995.

**Other ...**
Version 1.5. Public domain program by Loftus Becker. Version 3.0 now available. 128K minimum memory. Shareware: $10.

**PageMaker**
Version 2.0. Aldus Corp., 411 First Ave. S #200, Seattle, WA 98104, 206/622-5500. Key-disk copy protection. 512K minimum memory; requires two drives and a PostScript printer. $495.

**Parameter Manager**
Version 1.092. Structural Measurement Systems, Inc., 645 River Oak Pkwy., San Jose, CA 95134, 408/263-2200, 800/654-5157 (orders only), 800/247-4994 (orders only). Requires 128K ROM and SCSI interface; requires two drives; 800K external drive recommended. Version 1.10 now available. $495, PM-Plus version 1.0 $995. PM-Plus options: remote data entry $695, PDC Interface $995-$1295.*

*(continues)*

CALL FOR NOMINATIONS

# *First Annual*
# *Andrew Fluegelman Award — 1987*

**Purpose**
The Andrew Fluegelman Award is given annually to encourage personal computer software excellence and to recognize a software programmer or team of programmers. We are looking for people who have made a substantial, innovative contribution to the personal computer community in commercial, shareware or public domain software.

The award was established in 1986 by PCW Communications, Inc., to commemorate Fluegelman's contributions to the software field. Fluegelman developed *PC-Talk*, the first easy-to-use and powerful communications program for the IBM PC. His concept of freeware remains one of the most innovative means of sharing and marketing software. Fluegelman died in July 1985, and a fund was established in his name. The annual award is made possible through this fund.

**Eligibility**
Any commercial, shareware, or public-domain personal computer software developed by an individual or a team—including utilities, applications, and languages—is eligible. The program must have been released between January 1, 1983, and December 31, 1986. Nominations can be submitted by anyone who did not participate in the software's development. Companies are encouraged to submit nominations for software that they market; but only individuals, not companies, are to be nominated.

**Prize**
The award winner will receive $5000 and a commemorative plaque. The first award will be presented at a ceremony in California in March 1987.

**Judging**
Each program will be evaluated according to the following criteria:
- It advances the state of the art of personal computing
- It manifests innovation in concept and design
- It demonstrates orientation to personal computer users

**Selection of Winner**
The award recipient is selected in a two-step procedure. First, an independent screening committee will review nominations and select the ten finalists.

Second, a panel of judges will evaluate the work of the ten finalists. From these ten, one award recipient will be selected.

This year's 1987 judges are Daniel Bricklin, president of Software Garden; Harry Miller, editor of *PC World*; Jerry Schneider, president of Capital PC User Group; Bob Wallace, president of Quicksoft; and Camilo Wilson, chief executive officer of Lifetree Software.

**Deadline**
Nomination entries must be postmarked no later than February 1, 1987.
Mail to: Andrew Fluegelman Award
PCW Communications, Inc.
501 Second St.
San Francisco, CA 94107
For further information, please call Shirley Gines at (415) 546-7722.

**Program Copies**
Finalists will be asked to submit five copies of their program for the judges' evaluation. These will be returned after judging. Please do not send programs until you are notified that you are a finalist.

## *1987 Andrew Fluegelman Award Nomination Form*

**Please type your entries; no handwritten entries will be accepted.**
**If you need more room, attach additional pages to this form.**

Name of program: _____
Creator (if more than one, designate team leader): _____
_____
Software marketer: _____
Brief description of program (100 words or less): _____
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_____
Reason for your nomination (100 words or less): _____
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Software program release date: _____
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**Please send five completed copies of this nomination form to:**

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**PhD**
Amcodyne, 1301 S. Sunset, Longmont, CO 80501, 303/772-2601. Requires 128K ROM and SCSI interface; HFS only; not LaserWriter compatible. $6995.

**Phoenix 3D Level One**
Version 1.0. Dreams of the Phoenix, Inc., P.O. Box 10273, Jacksonville, FL 32247, 904/396-6952. 512K minimum memory; two drives recommended. Version 1.1 now available. $39.95.*

**PL 20, 30, 50, 80, 172**
Peripheral Land, 3677 Enochs St., Santa Clara, CA 95051, 408/733-7600. Requires 128K ROM and SCSI interface. 20 $995, 30 $1295, 50 $1995, 80 $2495, 172 $5995.

**Plus-20, 30, 45, 65, 20T**
Peak Systems, 1120 Capital of Texas Hwy., Austin, TX 78746, 512/329-1020, 800/225-7509. Requires 128K ROM and SCSI interface; HFS only. 20 $1095, 30 $1395, 45 $1895, 65 $2495, 20T $895.

**ProApp 10, 20, 40S**
ProApp, Inc., 10005 Muirlands, Ste. O, Irvine, CA 92718, 714/855-9088, 800/424-2425. Requires 128K ROM and SCSI interface. 10 $795, 20 $995, 40S $1995.

**Professional Bibliographic System**
Version 2.6. Personal Bibliographic Software, P.O. Box 4250, Ann Arbor, MI 48106, 313/996-1580. Key-disk copy protection; installs on hard disk. 128K minimum memory; two drives recommended. $295.*

**Profit Stalker II**
Version 1.2. Button.down Software, P.O. Box 19493, San Diego, CA 92119, 619/463-7474. 512K minimum memory; 800K external drive and modem recommended. $250.

**Radius Full Page Display**
Radius, Inc., 1050 E. Duane, Ste. F, Sunnyvale, CA 94086, 408/732-1010. Requires 128K ROM and SCSI interface. $1995.

**ReadySetGo**
Version 3.0. Manhattan Graphics, 401 Columbus Ave., Valhalla, NY 10595, 914/769-2800, 800/634-3463. 512K minimum memory. $295.

**Run'r**
Version 1.0. Public domain program by Tony Jacobs. 128K minimum memory. Shareware.

**S-20+**
Peachtree Technology, Inc., 3120 Crossing Park, Norcross, GA 30071, 404/662-5158. Requires 128K ROM and SCSI interface; HFS only. $1399.

**Sales and Market Forecasting**
Version 4.0. Lionheart Press, Inc., P.O. Box 379, Alburg, VT 05440, 514/933-4918. 128K minimum memory; 800K drive and modem recommended. $145, with Forecasting and Time Series $200.

**SD-11, 22, 30, 60, 105, 140, 170**
Softworks, Limited, 2944 N. Broadway, Chicago, IL 60657, 312/975-4030. Requires 128K ROM and SCSI interface; Mac Plus recommended; HFS only. 11 $599, 22 $850, 30 $999, 60 $1495, 105 $2995, 140 $3495, 170 $3995.

**Shanghai**
Prerelease version reviewed. Activision, Inc., 2350 Bayshore Pkwy., Mountain View, CA 94043, 415/960-0410. Not copyable. 128K minimum memory. Version 1.0 now available. $44.95.*

**Sierra 20/40, 30/40**
Peak Systems, 1120 Capital of Texas Hwy., Austin, TX 78746, 512/329-1020, 800/225-7509. Requires 128K ROM and SCSI interface; HFS only. 20/40 $2495, 30/40 $2695.

**SkipFinder**
Version 6.1. Public domain program by Darin Adler.

**SlimLine SCSI Drives**
Univation, 1231 California Circle, Milpitas, CA 95035, 408/263-1200, 800/221-5842. Requires 128K ROM and SCSI interface; HFS only. AS10R

*(continues)*

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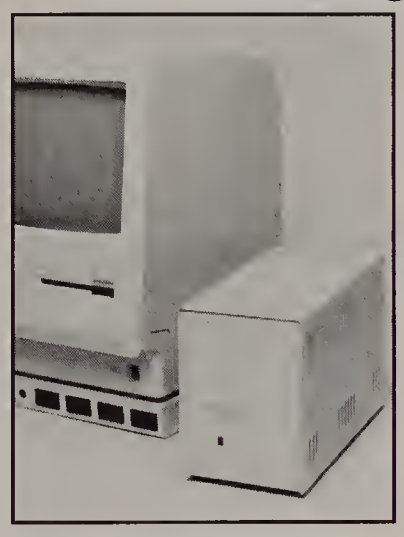

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*MacUser*, April, 1986

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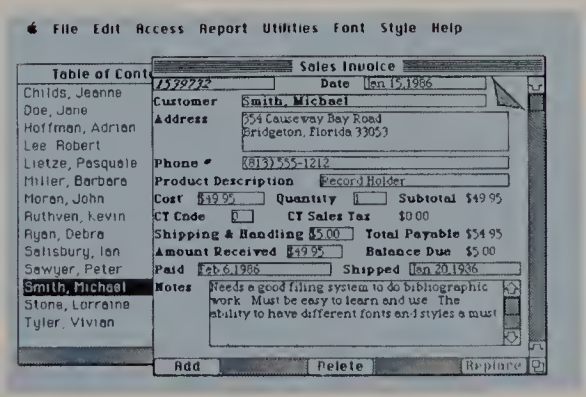


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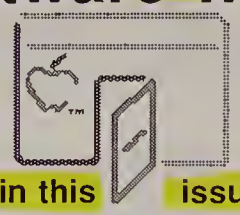

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**Solo**
Version 1.0. Mac America, 18032-C Lemon Dr., Yorba Linda, CA 92686, 714/779-2922. 512K minimum memory. Available at January Mac Expo. Price to be announced (probably under $400).

**Spectra Drive 20**
Spectra Micro Development, P.O. Box 41795, Tucson, AZ 85717, 602/884-5178. Requires 128K ROM and SCSI interface; Mac Plus recommended; HFS only. $795.

**Strategic Conquest II**
Version 2.0. PBI Software, Inc., 1111 Triton Dr. #201, Foster City, CA 94404, 415/349-8765, 800/843-5722, 800/572-2746 in California. Not copyable. 128K minimum memory. Also available: Strategic Conquest +, 512K minimum memory. $59.99 each.*

**SunStreak SCSI Drives**
Sunol Systems, Inc., 1177 Quarry Ln., Pleasanton, CA 94566, 415/484-3322. Requires 128K ROM and SCSI interface. 21 $1295, 30 $1695, 45 $2795, 70 $3795, 110 $5295, 180 $7995.

**SuperPaint**
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**SupraDrive 20, 30, 60**
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**TDBK-20+, TDBK-45**
MDIdeas, 1111 Triton Dr. #205, Foster City, CA 94404, 415/573-0580. Requires 128K ROM and SCSI interface. 20+ $1095, 45 $1295.

**Textures**
Version .80. Addison-Wesley Publishing Company, EMSD, Jacob Way, Reading, MA 08167, 617/944-6795, 800/255-2550. 512K minimum memory; requires two drives; Mac Plus and hard disk recommended. $495.*

**TimeLink**
Version 1.0. Batteries Included, 30 Mural St., Richmond Hill, Ontario, Canada L4B 1B5, 416/881-9941, 800/387-5707. 128K minimum memory. Version 2.0 now available; return disk and $10 for update. $49.95.*

**Tiny Finder**
Public domain.

**TOPS**
Version September 11. Centram Systems West, Inc., 2560 Ninth St. #220, Berkeley, CA 94710, 415/549-5900. 512K minimum memory; requires AppleTalk network and at least one hard disk. $149 per Mac, $389 per IBM PC (or compatible).

**Warp 20, Photon 20, 30, Transporter 20, Photon 2001**
Warp Nine Engineering, Inc., 1751 W. Country Rd. B #107, St. Paul, MN 55113, 612/426-9769, 800/654-5294 or 800/328-6795 ext. 433. Requires 128K ROM and SCSI interface. Warp 20 (internal) for 512K $795, for Mac Plus $849; Photon 20 (external) for 512K with SCSI port $845, for Mac Plus $695; Photon 30 for 512K $945, for Mac Plus $795; Photon 2001 for 512K $1645, for Mac Plus $1495.

**Waystation**
Version 2.6. Public domain program by Steve Brecker.

**WhisperDrive**
Palo Alto MicroSystems, 369 Christopher Ct., Palo Alto, CA 94306, 415/424-8740. Requires 128K ROM and SCSI interface; Mac Plus recommended; MFS compatible only with appropriate software. $889 internal, $789 external.

**WriteNow**
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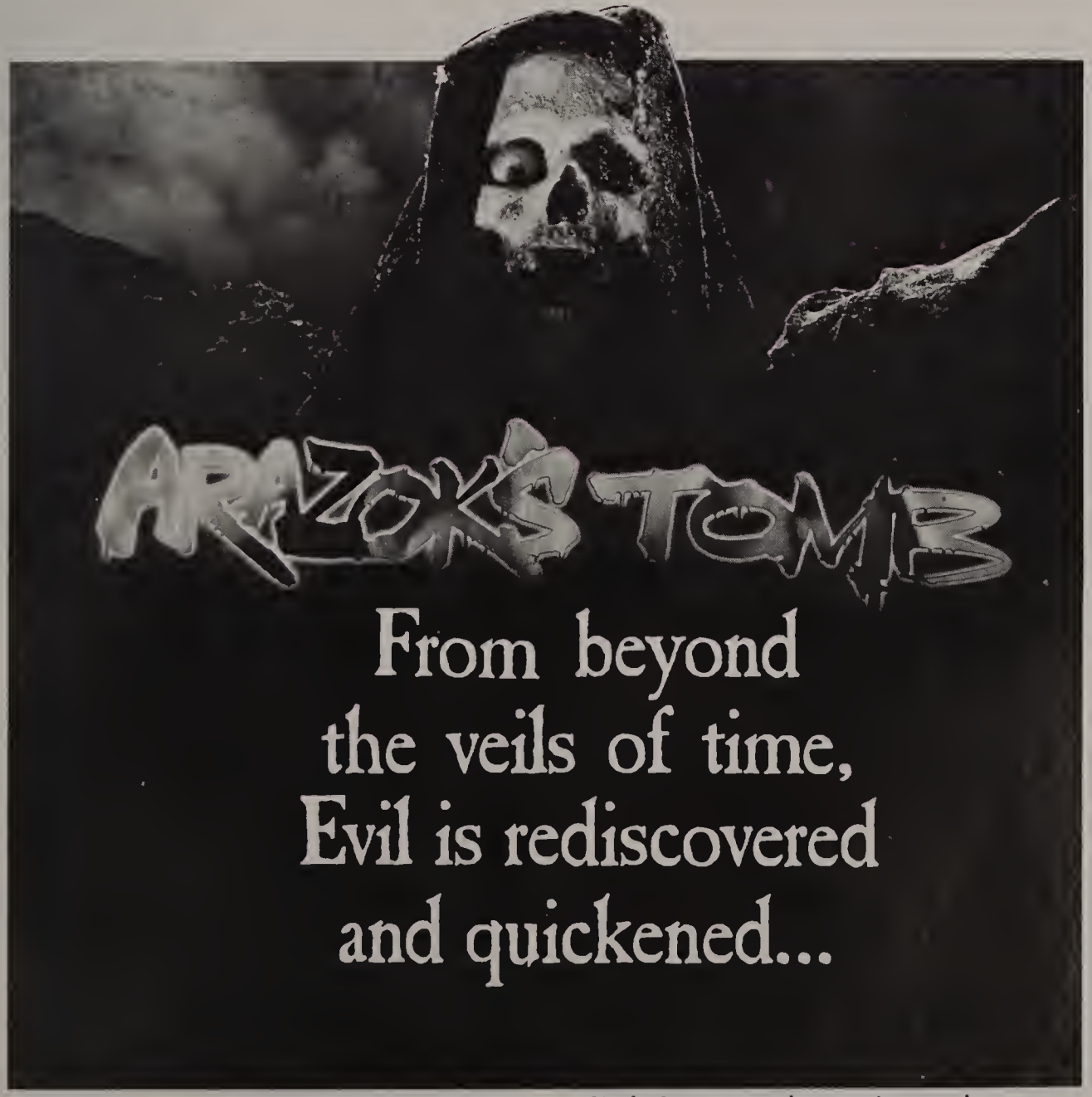


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# Macworld Best-Sellers

| Months on chart | Last month | This month | Business Software |
|---|---|---|---|
| 19 | 1 | 1 | **Microsoft Word** *Microsoft* |
| 11 | 2 | 2 | **Microsoft Excel** *Microsoft* |
| 7 | 5 | 3 | **PageMaker** *Aldus* |
| 3* | 4 | 4 | **MacWrite** *Apple Computer* |
| 16 | 5 | 5 | **MacDraw** *Apple Computer* |
| 3* | 6 | 6 | **MacPaint** *Apple Computer* |
| 2 | 7 | 7 | **FullPaint** *Ann Arbor Softworks* |
| 4 | 8 | 8 | **MacDraft** *Innovative Data Design* |
| 13 | 9 | 9 | **Jazz** *Lotus Development* |
| 18 | 10 | 10 | **Microsoft File** *Microsoft* |

| | | | Education Software |
|---|---|---|---|
| 3 | 1 | 1 | **Math Blaster!** *Davidson and Associates* |
| 3 | 2 | 2 | **Typing Tutor III** *Simon and Schuster Computer Software* |
| 3 | 3 | 3 | **MasterType** *Scarborough Systems* |
| 3 | 4 | 4 | **MacEdge II** *Think Educational Software* |
| 3 | 5 | 5 | **Kids' Time** *Great Wave Software* |

| | | | Entertainment Software |
|---|---|---|---|
| 3 | 1 | 1 | **Flight Simulator** *Microsoft* |
| 3 | 2 | 2 | **MacGolf** *Practical Computer Applications* |
| 1 | – | 3 | **Lode Runner** *Brøderbund Software* |
| 2 | 4 | 4 | **Sargon III** *Spinnaker Hayden* |
| 2 | 5 | 5 | **Gato** *Spectrum HoloByte* |

| | | | Networking/Data Communications |
|---|---|---|---|
| 3 | 1 | 1 | **AppleTalk** *Apple Computer* |
| 3 | 2 | 2 | **MacServe** *Infosphere* |
| 3 | 3 | 3 | **Apple Personal Modem** *Apple Computer* |
| 11 | 4 | 4 | **MacTerminal** *Apple Computer* |
| 3 | 5 | 5 | **Smartcom II** *Hayes Microcomputer Products* |

| Months on chart | Last month | This month | Hard Disk Drives |
|---|---|---|---|
| 3 | 1 | 1 | **Apple Hard Disk 20** *Apple Computer* |
| 1 | – | 1 | **HyperDrive 10** *General Computer* |
| 3 | 2 | 3 | **HyperDrive 20** *General Computer* |
| 3 | 3 | 4 | **DataFrame 20** *SuperMac Technology* |
| 3 | 5 | 5 | **LoDown-20** *LoDown* |

| | | | Books |
|---|---|---|---|
| 3 | 1 | 1 | **Excel in Business** *Douglas Cobb, Microsoft Press* |
| 3 | 2 | 2 | **Inside Macintosh** *Addison-Wesley* |
| 2 | 3 | 3 | **The Apple Macintosh Book** *Cary Lu, Microsoft Press* |
| 3 | 3 | 4 | **The Printed Word** *David A. Kater and Richard L. Kater, Microsoft Press* |
| 3 | 5 | 5 | **Microsoft Macinations** *Mitchell Waite, Robert Lafore, and Ira Lansing, Microsoft Press* |

## Product Watch

Editors' choice:
Other recent products of particular interest.

**Adobe Illustrator** *Adobe Systems* PostScript graphics

**Dark Castle** *Silicon Beach* game

**LabView** *National Instruments* engineering

*Source: Exclusive InfoCorp survey of more than one hundred Macintosh retailers' and selected mail-order suppliers' sales during September 1986.*

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